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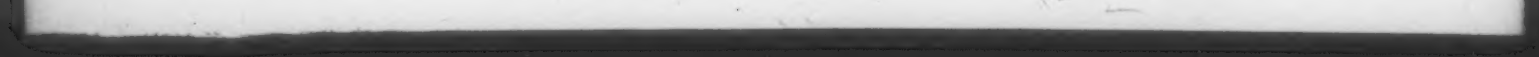

THE
QUARTERLY JOURNAL
OF
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A THEORY OF ECONOMIC OSCILLATIONS

SUMMARY

Introduction, 1. — Walrasian equations, 3. — Partial elasticity of demand, 9. — Partial elasticity of supply, 15. — Coefficients of production, 17. — A moving general equilibrium, 23. — Economic oscillations, 26. — Conclusions, 28.

By an economic oscillation I mean a complete fluctuation of an economic quantity about its normal position of equilibrium. The equilibria about which the oscillations occur may be either particular or general, and both particular and general equilibria may be either static or moving. The classification of equilibria would therefore be as follows:

Economic equilibria
- (i) Particular
  - (1) static
  - (2) moving
- (ii) General
  - (1) static
  - (2) moving

The oscillations about these equilibria may be either periodic oscillations, which are cycles properly so-called, or non-periodic oscillations.

A great part of the history of economic theory has been a continuous effort toward greater clearness as to the meaning and conditions of particular and general equilibria. The whole long historic discussion of "the

law of demand and supply" and "the equation of supply and demand" has been directed toward building up a theory of particular equilibrium in its statical aspect. Recently the problem of a moving particular equilibrium of demand and supply in its concrete, realistic character has been entered upon. The more difficult inquiry as to the nature and conditions of general equilibrium was approached by Cournot, and carried through the statical phase, largely with the aid of Cournot's conceptions and technique, by Walras and Pareto.

Cournot sketched the transition that must be made from the study of particular equilibria, in the theory of which his own work was epochal, to general equilibria, upon the theory of which he scarcely entered:

> So far we have studied how, for each commodity by itself, the law of demand in connection with the conditions of production of that commodity, determines the price of it and regulates the incomes of its producers. We considered as given and invariable the prices of other commodities and the incomes of other producers; but in reality the economic system is a whole of which all parts are connected and react on each other. An increase in the income of the producers of commodity *A* will affect the demand for commodities *B*, *C*, etc., and the incomes of their producers, and, by its reaction, will involve a change in the demand for commodity *A*. It seems, therefore, as if, for a complete and rigorous solution of the problems relative to some parts of the economic system, it were indispensable to take the entire system into consideration. But this would surpass the powers of mathematical analysis and of our practical methods of calculation, even if the values of all the constants could be assigned to them numerically.[1]

Notwithstanding Cournot's hesitation and misgivings, he has nevertheless stated the problem precisely. By means of mathematical analysis we must seek to obtain a view of the economic system as a whole, and the values of all the representative constants must be numerically assigned. Otherwise there will be no ade-

1. Cournot: Researches into the Mathematical Principles of the Theory of Wealth (Bacon's translation), p. 127.

quate perception of the nature and conditions of a general equilibrium, — an equilibrium of the economic system as a whole, — and consequently there will be no complete appreciation of the nature and causes of the fluctuations from the general equilibrium which have been defined as economic oscillations.

In the ensuing pages I shall carry the statical theory of general equilibrium elaborated by Walras and Pareto to the stage of a synthetic, realistic view of a moving general equilibrium; methods for determining numerically the necessary constants in the equations will be presented; and the conclusion will be reached that economic oscillations, other than periodic, are simply the results of perturbations in a system striving, under the influence of statical forces, toward a moving general economic equilibrium.

Walrasian Equations

On June 10, 1909, there was placed on the wall of the *Académie* of Lausanne a bronze medallion portrait bearing this inscription:

> *A Léon Walras, né à Evreux en 1834, professeur à l'Académie et à l'Université de Lausanne qui, le premier, a établi les conditions générales de l'équilibre économique fondant ainsi "l'École de Lausanne." Pour honorer cinquante ans de travail désintéressé.*

The chief claim of Léon Walras to scientific immortality does not lie in his having advanced, contemporaneously with Jevons and Menger, the marginal utility theory of value, nor in his elaborate plea for free trade, nor in his ingenious schemes of taxation and stable money, but, as indicated by the legend upon the Lausanne memorial tablet, in his having established for the first time the conditions of a general economic equilibrium.

Some fifteen years before the *Jubilé Walras* in 1909, Enrico Barone, himself an expert, expressed his admiration for the work of the Lausanne economist in these words: "Of theories of equilibrium we know no other up to the present time which is more general, more comprehensive and more harmonious in all its parts than the very beautiful theory of Walras." [2]

Pareto, whose structure of pure economics rests upon a Walrasian foundation, was of the opinion that certain equations developed by his "venerated master" [3] "jouent dans l'étude de l'équilibre économique un rôle analogue à celui des équations de Lagrange dans l'étude de l'équilibre mécanique." [4] He has himself told how, at the first reading of the works of Walras, he had been repelled by the metaphysical conceptions which Walras employed in common with his contemporaries but which, according to Pareto, should have no place in experimental science. Under a subsequent inspiration from Pantaleoni, he reverted to the Walras inquiry and found there the golden conception of economic equilibrium.[5] That conception dominates Pareto's work not

2. Barone, "Sul Trattamento di Quistioni Dinamiche," Giornale degli Economisti (1894), p. 407.

3. ". . . mon vénéré maître, M. le Professeur Walras. L'étude de ses travaux m'a initié au théorie de l'économie mathématique et a été l'origine de mes propres recherches." Jubilé Walras (Lausanne, 1909), p. 55.

4. Pareto, Cours d'Economie Politique, vol. i, p. 25.

5. "Avevo letto le opere del Walras, ed avevo lasciato l'oro per badare alla roccia sterile, cioè alle considerazioni metafisiche. Respinto da queste, che mi parevano, e tuttavia mi paiono, assurde, non credevo che simili teorie potessero avere luogo nella scienza sperimentale. Ma dopo avere letto i *Principii* del Pantaleoni, si modificò in me questo concetto. Tornai a leggere le opere del Walras, e vi trovai l'oro, cioè il concetto dell 'equilibrio economico; e così, posto sulla buona via, spero di avere trovato qualche teoria che si avvicini a quelle rigorosamente scientifiche che oramai dominano nelle scienze naturali, e che potrà servire sinchè altri ne trovi altre che meglio ancora abbiano tale carattere; e così si seguiterà sinchè progredirà la scienza." — Vilfredo Pareto, Economia Dimessa (Bologna, 1912), p. 6. (Estratto da La Libortà Economica, Anno X — N. 17–18.)

only in economics, but also in sociology. In his view a necessary preliminary to sociological theory is an acquaintance with the economic theory of equilibrium.[6]

In its simplest form — the form that will be used later on in this essay — the conditions of a general economic equilibrium as conceived by Walras are described by four groups of equations. If, as a methodological device, the fiction of a static state is resorted to, with the consequent corollary that no readjustment of expenditure on the part of consumers nor of the factors of production on the part of entrepreneurs will result in a gain, the conditions of the prevailing general equilibrium are described by the following groups of equations: (1) equations of demand for commodities; (2) equations of supply of productive services; (3) equations expressing the equality of the quantities of services demanded to the quantity of services supplied; (4) equations expressing the equality of the prices of commodities with the respective costs of production.

Walras formulates his theory by means of the following symbols:

The commodities produced in a unit of time are m in number and are represented by (A), (B), (C). . . .

The factors of production fall into three classes: services of land, services of persons, and services of capital goods. The total number of the services, for the unit of time, is assumed to be n, and these are designated as,

6. "Gli stati X_1, X_2, X_3,... sono analogli a quelli che l'Economia pura considera per un sistema economico; e l'analogia è tanto grande che gli stati del sistema economico si possono considerare come casi particolari degli stati generali del sistema sociologico. . . . Questa materia non è facile, e credo quindi dovere aggiungere che stimo indispensabile che il lettore che desidera acquistare un concetto chiaro degli stati sociologici X_1, X_2, X_3,... e dei modi possibili di determinarli, studi prima il fenomeno simile che si considera nelle teorie dell' Economia pura. Occorre sempre procedere dal meno al più difficile, dal più al meno noto." Pareto, Trattato di Sociologia Generale, seconda edizione, vol. iii, pp. 271, 272, 272 n.

Services of land (*terre*), $(T), (T'), (T''), \ldots$
Services of persons, $(P), (P'), (P''), \ldots$
Services of capital, $(K), (K'), (K''), \ldots$

If the commodity (A) be taken as a *numeraire* in terms of which the prices of commodities and services are expressed, the respective prices for the commodities may be represented as $p_b, p_c, p_d, \ldots$ and the respective prices of the services as $p_t \ldots, p_p \ldots, p_k \ldots$

Since the prices of the $(m - 1)$ commodities are expressed in terms of the *numeraire*, — commodity (A), — there are $(m - 1)$ demand functions, which Walras represents with these symbols;

$$\left.\begin{aligned} D_b &= F_b\,(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots), \\ D_c &= F_c\,(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots), \\ D_d &= F_d\,(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots), \\ &\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \end{aligned}\right\} \quad \ldots\ldots \quad (1).$$

In these expressions the demand for any commodity is regarded as a function not only of its own price but of the prices of all commodities. These $(m - 1)$ demand functions constitute the first group of equations contributing to the description of a general equilibrium.

Corresponding to these $(m - 1)$ equations of demand for commodities, there are n equations of supply of productive services. The n functions descriptive of supply ("*offre*") are

$$\left.\begin{aligned} O_t &= F_t\,(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots), \\ O_p &= F_p\,(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots), \\ O_k &= F_k\,(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots), \\ &\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots \end{aligned}\right\} \quad \ldots\ldots \quad (2).$$

These n equations of supply constitute the second group of conditions contributing toward the description of a general equilibrium.

As a means of deriving the next two groups of equations, Walras defines his understanding of coefficients of production. The coefficients of production (*coeffi-*

cients de fabrication) of a commodity (A) are the quantities of the services of the factors of production that enter into the manufacture of a unit of (A). Since the commodities produced are (A), (B), (C),... and the factors of production are (T), (P), (K),... the coefficients of production may be represented, respectively, by

$$\begin{array}{l} a_t, a_p, a_k, \ldots \\ b_t, b_p, b_k, \ldots \\ c_t, c_p, c_k, \ldots \\ \ldots \quad \ldots \quad \ldots \end{array}$$

The coefficients of production are assumed by Walras to be constant in the static state.

We may now consider the third and fourth groups of equations determining the general equilibrium. Since there are n productive services, there are n equations expressing the equality of the quantities of services demanded to the quantities of the services supplied. Walras' symbols are

$$\left.\begin{array}{l} a_tD_a + b_tD_b + c_tD_c + d_tD_d + \ldots = O_t, \\ a_pD_a + b_pD_b + c_pD_c + d_pD_d + \ldots = O_p, \\ a_kD_a + b_kD_b + c_kD_c + d_kD_d + \ldots = O_k, \\ \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \end{array}\right\} \quad \ldots \quad (3).$$

These n equations of demand and supply are the third group of equations contributing toward the description of a general equilibrium.

In the general equilibrium of the static state the costs of production of the commodities must be equal to their prices, and since there are m commodities, there are m equations descriptive of the equality of cost and price. They are

$$\left.\begin{array}{l} a_tp_t + a_pp_p + a_kp_k + \ldots = 1, \\ b_tp_t + b_pp_p + b_kp_k + \ldots = p_b, \\ c_tp_t + c_pp_p + c_kp_k + \ldots = p_c, \\ \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \end{array}\right\} \quad \ldots \ldots \ldots \quad (4).$$

These m equations of cost and price constitute the

fourth and last group of equations contributing to the description of a general equilibrium.

Theoretically the problem of a general equilibrium is now solved, because the number of the equations is equal to the number of the unknown quantities. There are $(2m + 2n - 1)$ unknown quantities, namely, the m quantities of the m commodities demanded; the $(m - 1)$ prices of the m commodities in terms of one of them which is used as a standard of prices; the n quantities of the n services that are supplied; and the n prices of the n services in terms of the standard of prices. To determine these unknown quantities there are $(2m + 2n - 1)$ equations, namely, the $(m - 1)$ equations of demand for the $(m - 1)$ commodities; the n equations of supply of the n services; the n equations expressing the equality of the quantities of the services demanded to the quantities of the services offered; and the m equations expressing the equality of the costs of production and the prices of the m commodities.

No mathematical economist, as far as I am aware, has ever attempted to pass from this or any similar presentation of a statical, hypothetical equilibrium to a realistic treatment of an actual, moving general equilibrium.[7]

7. Representative views as to the impossibility of making the transition are those of Auspitz and Lieben, and of Edgeworth:

"Ebenso begnügen wir uns, den allgemeinen Formcharacter unserer Kurven zu ermitteln, und enthalten uns, eine Näherungsgleichung derselben zu geben, wie dies etwa mit Hilfe der Statistik für bestimmte Fälle versucht werden könnte. Die der Erfahrung entnommenen Angaben haben nämlich zwar einen historischen Wert, sind aber sonst schwer vergleichbar, da in verschiedenen Zeitmomenten nicht nur die Preisverhältnisse, sondern auch andere, vielleicht höchst wichtige Umstände sich geändert haben werden; solche Daten können also unserer Voraussetzungen nicht entsprechen. Uberdies müsste eine Formel, die der Wirklichkeit genügen wollte, so unklar und verwickelt ausfallen, als es die Wirklichkeit selbst ist." Auspitz und Lieben, Untersuchungen über die Theorie des Preises, pp. xiv, xv.

Partial Elasticity of Demand

Progress toward a realistic treatment of a moving general equilibrium has been made since the publication of the work of the École de Lausanne. A useful type of the general demand function is known, and methods are available by means of which the general function may be given concrete form.

According to the notation of Walras the demand for a representive commodity (C) is written

$$D_c = F_c(p_a, p_b, p_c, \ldots p_b, p_c, p_d, \ldots).$$

In this notation the prices and the quantity of commodity are such as would prevail under the conditions of the hypothetical static state. Suppose, now, that all prices and all quantities of commodities are subjected to such changes as would give to each of them a secular trend. Suppose, further, that the secular trend of each price and of each amount of commodity is determined statistically by fitting to the data, by the method of least squares, a curve of type,

$$y = a_0 + a_1x + a_2x^2 + a_3x^3 + \ldots$$

If the D's and p's are now taken as the actual quantities of commodities and the actual prices, their trend-values at a given time may be represented by putting a bar over these symbols, so that $\overline{D}_c$ will indicate the trend-value of the quantity of commodity (C) demanded

Referring to the question of finding demand curves, "Es wird wohl nie möglich sein sich diese Kenntniss genau zu verschaffen." Ibid., p. 373.

"M. Edgeworth croit bonnement qu'il est tout simplement oiseux de chercher à démontrer la voie suivant laquelle le système économique est amené à l'équilibre, et il trouve une confirmation de cette vue dans l'opinion émise par Jevons, à savoir que les problèmes relatifs à équilibre économique doivent être traités au point de vue statique et non pas dynamique." Ladislas Bortkévitch, "Léon Walras. Éléments d'économie politique pure, ou Théorie de la richesse sociale," Revue d'économie politique (Janvier-Février, 1890), p. 6.

at a time when the actual quantity of commodity demanded is D_c. Similarly p_c will indicate the trend-value of the price of (C) at the time the actual price is p_c. The new type of demand curve may then be represented as

$$\frac{D_c}{\overline{D_c}} = F_c\left(\frac{p_t}{\overline{p}_t}, \frac{p_p}{\overline{p}_p}, \frac{p_b}{\overline{p}_b}, \cdots \frac{p_b}{\overline{p}_b}, \frac{p_c}{\overline{p}_c}, \frac{p_d}{\overline{p}_d}, \cdots\right) \quad . \quad . \quad . \quad (5).$$

This formula expresses the simple hypothesis that the trend-ratio of the quantity of commodity demanded is a function of the trend-ratios of all prices. While the hypothesis is simple it is the means of making the transition from a purely rational construction to a real situation. The introduction of the conception of a function of trend-ratios makes possible the statistical evaluation of the general demand function just as soon as its algebraic form is known. An appropriate algebraic form, as has been shown in an earlier number of this Journal,[8] may be deduced from considerations of economic theory.

If the amount of commodity demanded, D_c, is regarded as a function of its own price alone, the demand function in terms of the price trend-ratio would be

$$\frac{D_c}{\overline{D_c}} = F_c\left(\frac{p_c}{\overline{p}_c}\right) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (6).$$

If the elasticity of demand is indicated by η and if η is assumed, in this case, to be constant and equal to β_c an appropriate form of the above demand function is

$$\frac{D_c}{\overline{D_c}} = \text{constant}\left(\frac{p_c}{\overline{p}_c}\right)^{\beta_c} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (7).$$

A simplification of the formula may be obtained by putting the constant coefficient equal to unity, and the justification of the procedure, which will be used re-

8. "Partial Elasticity of Demand," May, 1926. Large use is made of the article in the reasoning of this section.

peatedly in the subsequent reasoning, may be seen from the following consideration. The quantities $\overline{D}_c$ and $\overline{p}_c$ are the trend-values of D_c and p_c, and the trend-values themselves are determined by fitting to the respective data types of parabolas by the method of least squares. But this method of fitting requires that the sum of the positive deviations from the trend shall be equal to the sum of the negative deviations.[9] Consequently, the mean value of the trend-ratios $\frac{D_c}{\overline{D}_c}$ and of the trend-ratios $\frac{p_c}{\overline{p}_c}$ will, on the average, be each equal approximately to unity. An actual illustration[1] is given in Table I.

If, therefore, it be assumed that when $\frac{p_c}{\overline{p}_c}$ is equal to unity, which is its mean value, $\frac{D_c}{\overline{D}_c}$ will also be equal to its mean value, which is unity, the equation to the simple demand curve may be written

$$\frac{D_c}{\overline{D}_c} = \left(\frac{p_c}{\overline{p}_c}\right)^{\beta_c} \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (8),$$

or, in its logarithmic form,

$$\log\left(\frac{D_c}{\overline{D}_c}\right) = \beta_c \log\left(\frac{p_c}{\overline{p}_c}\right) \quad \ldots\ldots\ldots\ldots \quad (9).$$

Equation (8) shows that when the current price p_c is equal to its trend-value $\overline{p}_c$, the current amount demanded D_c is equal to its trend-value $\overline{D}_c$.

9. If the trend function is $y = a_0 + a_1x + a_2x^2 + a_3x^3 + \ldots$ the sum of the positive deviations is equal to the sum of the negative deviations by the condition of the normal equation

$$\frac{\partial \Sigma v^2}{\partial a_0} = \Sigma y - na_0 - a_1\Sigma x - a_2\Sigma x^2 - a_3\Sigma x^3 - \ldots = 0,$$

where Σv_1 is the sum of the squares of the deviations, and n is the number of the observations.

1. "A Moving Equilibrium of Demand and Supply," Quarterly Journal of Economics, May, 1925.

TABLE I. — DATA FOR COMPUTING THE CURVE OF DEMAND. THE ANNUAL PRODUCTION OF POTATOES AND THEIR FARM PRICES IN THE UNITED STATES

I Year	II December Farm prices (cents per bushel)	III Production (millions of bushels)	IV Price trend ratio	V Production trend ratio
1900	43.1	211	0.794	0.988
1901	76.7	188	1.397	0.810
1902	47.1	285	0.850	1.144
1903	61.4	247	1.094	0.932
1904	45.3	333	0.798	1.191
1905	61.7	261	1.073	0.891
1906	51.1	308	0.877	1.011
1907	61.8	298	1.044	0.945
1908	70.6	279	1.179	0.860
1909	54.1	389	0.887	1.170
1910	55.7	349	0.898	1.029
1911	79.9	293	1.268	0.850
1912	50.5	421	0.788	1.207
1913	68.7	332	1.054	0.945
Mean	...	...	1.000	0.998

Steps parallel to those that have just been indicated in case of a function of a single variable lead to analogous results when the demand for a commodity is a function of many variables. The point of departure in the derivation of the simple demand curve is the definition of elasticity of demand η, which is the ratio of the relative change in the quantity of commodity demanded to the relative change in its price.

When $D_c = F_c(p_c)$,

$$\eta = \frac{dD_c}{D_c} \Big/ \frac{dp_c}{p_c} = \frac{p_c}{D_c} \cdot \frac{dD_c}{dp_c} \quad \ldots \ldots \ldots \quad (10).$$

If the demand is a function of all prices,

$$D_c = F_c(p_a, p_p, p_k, \cdots p_b, p_c, p_d, \cdots) \quad \ldots \quad (11),$$

the above procedure in case of a single variable suggests the wisdom of defining the conception of partial elasticity of demand as a means of deriving the general demand function.

If the demand function is in the form of equation (11), the partial elasticity of demand for commodity (C) with respect to p_t may be written, by following the analogy of (10), as

$$\eta_{cp_t \cdot p_p p_k \cdots p_b p_c p_d \cdots} = \frac{p_t}{D_c} \cdot \frac{\partial D_c}{\partial p_t} \quad \ldots \ldots \ldots \quad (12).$$

In this notation the primary subscripts of η are separated from the secondary subscripts by a dot, and the whole symbol indicates the partial elasticity of demand for commodity (C), with respect to p_t, when the demand for (C) is a function of $p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots$ In a similar manner the partial elasticity of demand for the commodity with respect to every other price may be indicated.

These formulas descriptive of partial elasticity of demand afford the means of reaching an expression descriptive of the general demand function. The simple function of demand (8) was obtained by assuming the elasticity of demand η to be constant and equal to β_c. Let us now assume that in case the demand is a function of all prices, the partial elasticities of demand are all constant and equal, respectively, to $\beta_{ct}, \beta_{cp}, \beta_{ck}, \ldots$ $\beta_{cb}, \beta_{cc}, \beta_{cd}, \ldots$ The general demand function will then take the form

$$\frac{D_c}{\overline{D}_c} = \text{constant} \left(\frac{p_t}{\overline{p}_t}\right)^{\beta_{ct}} \left(\frac{p_p}{\overline{p}_p}\right)^{\beta_{cp}} \left(\frac{p_k}{\overline{p}_k}\right)^{\beta_{ck}} \left(\cdots\right)$$
$$\left(\frac{p_b}{\overline{p}_b}\right)^{\beta_{cb}} \left(\frac{p_c}{\overline{p}_c}\right)^{\beta_{cc}} \left(\frac{p_d}{\overline{p}_d}\right)^{\beta_{cd}} \left(\cdots\right). \quad \ldots \ldots \quad (13).$$

The simplification that was described a few moments ago when we were dealing with the common demand

curve may now be made with respect to the general demand function. The constant in (13) may be put equal to unity, and this will give as the general expression for the demand function

$$\frac{D_c}{\overline{D}_c} = \left(\frac{p_t}{\overline{p}_t}\right)^{\beta_{ct}} \left(\frac{p_p}{\overline{p}_p}\right)^{\beta_{cp}} \left(\frac{p_k}{\overline{p}_k}\right)^{\beta_{ck}} \left(\cdots\right) \left(\frac{p_b}{\overline{p}_b}\right)^{\beta_{cb}} \left(\frac{p_c}{\overline{p}_c}\right)^{\beta_{cc}} \left(\frac{p_d}{\overline{p}_d}\right)^{\beta_{cd}} \left(\cdots\right) \quad (14),$$

or, in the logarithmic form,

$$\log\left(\frac{D_c}{\overline{D}_c}\right) = \beta_{ct} \log\left(\frac{p_t}{\overline{p}_t}\right) + \beta_{cp} \log\left(\frac{p_p}{\overline{p}_p}\right) + \beta_{ck} \log\left(\frac{p_k}{\overline{p}_k}\right) + \cdots + \beta_{cb} \log\left(\frac{p_b}{\overline{p}_b}\right) + \beta_{cc} \log\left(\frac{p_c}{\overline{p}_c}\right) + \beta_{cd} \log\left(\frac{p_d}{\overline{p}_d}\right) + \cdots \quad (15).$$

An examination of (15) shows that the condition of constancy of the partial elasticities of demand is fulfilled. The partial derivative of (15) with respect, for example, to p_d gives

$$\frac{1}{D_c} \cdot \frac{\partial D_c}{\partial p_d} = \frac{\beta_{cd}}{p_d},$$

whence,

$$\frac{p_d}{D_c} \cdot \frac{\partial D_c}{\partial p_d} = \beta_{cd} \quad (16),$$

which expresses the assumption that the partial elasticity of demand is constant and equal to β_{cd}. The β's in (14) and (15) are the respective constant elasticities of demand.

From (14) the conclusion follows that, when all the prices are equal to their respective trend-values, the quantity of commodity demanded is equal to its trend-value.

Partial Elasticity of Supply

The typical supply function may be obtained in a manner similar to that in which the general equation to the demand function has been derived.

In the preceding section we have seen that if the demand for commodity (C) is expressed as

$$D_c = F_c(p_c),$$

and the elasticity of demand is defined as

$$\eta_D = \frac{dD_c}{D_c} \Big/ \frac{dp_c}{p_c} = \frac{p_c}{D_c} \cdot \frac{dD_c}{dp_c},$$

a useful expression for the simple demand curve may be obtained by putting η_D equal to a constant β_c and then integrating the resulting equation. Similarly, if the supply of the service (T) is expressed as

$$O_t = F_t(p_t),$$

and the elasticity of supply is defined as

$$\eta_S = \frac{dO_t}{O_t} \Big/ \frac{dp_t}{p_t} = \frac{p_t}{O_t} \cdot \frac{dO_t}{dp_t} \quad \ldots\ldots\ldots\ldots \quad (17),$$

an appropriate equation to the simple supply curve may be obtained by putting η_S equal to the constant γ_t and then integrating the resulting equation.

This parallel treatment of demand and supply may be extended to functions of many variables. Corresponding to the conception of partial elasticity of demand, which leads to the derivation of a general demand function, we may define the conception of partial elasticity of supply, which will lead to a general supply function. In case of demand we have found that, if the expression for demand is

$$D_c = F_c(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots),$$

the partial elasticity of demand for (C) with respect to a given price, for example p_t, is

$$D\eta_{cp_t \cdot p_p p_k \cdots p_b p_c p_d \cdots} = \frac{p_t}{D_c} \cdot \frac{\partial D_c}{\partial p_t}.$$

When the partial elasticities of demand are assumed to be constant and equal, respectively, to β_{ct}, β_{cp}, $\beta_{ck}, \ldots$ β_{cb}, β_{cc}, $\beta_{cd}, \ldots$ the general demand function takes the form given in (14) and (15).

Exactly similar reasoning will lead to an expression for the general supply function. If, in following Walras, we indicate the supply of a representative service (T) by

$$O_t = F_t(p_t, p_p, p_k, \ldots p_b, p_c, p_d, \ldots).$$

the partial elasticity of supply with respect to a typical price, for example, p_c, may be defined as

$$S\eta_{tp_c \cdot p_t p_p p_k \cdots p_b p_d \cdots} = \frac{p_c}{O_t} \cdot \frac{\partial O_t}{\partial p_c} \quad \ldots\ldots\ldots \quad (18).$$

If the partial elasticities of supply are assumed to be constant and equal, respectively, to

$$\gamma_{tt}, \gamma_{tp}, \gamma_{tk}, \ldots \gamma_{tb}, \gamma_{tc}, \gamma_{td}, \ldots$$

the general function descriptive of supply is

$$\frac{O_t}{\bar{O}_t} = \text{constant} \left(\frac{p_t}{\bar{p}_t}\right)^{\gamma_{tt}} \left(\frac{p_p}{\bar{p}_p}\right)^{\gamma_{tp}} \left(\frac{p_k}{\bar{p}_k}\right)^{\gamma_{tk}} \left(\ldots\right)$$
$$\left(\frac{p_b}{\bar{p}_b}\right)^{\gamma_{tb}} \left(\frac{p_c}{\bar{p}_c}\right)^{\gamma_{tc}} \left(\frac{p_d}{\bar{p}_d}\right)^{\gamma_{td}} \left(\ldots\right) \quad \ldots\ldots\ldots \quad (19).$$

By resorting to the simplification of putting the constant coefficient equal to unity, the general supply function becomes

$$\frac{O_t}{\bar{O}_t} = \left(\frac{p_t}{\bar{p}_t}\right)^{\gamma_{tt}} \left(\frac{p_p}{\bar{p}_p}\right)^{\gamma_{tp}} \left(\frac{p_k}{\bar{p}_k}\right)^{\gamma_{tk}} \left(\ldots\right)$$
$$\left(\frac{p_b}{\bar{p}_b}\right)^{\gamma_{tb}} \left(\frac{p_c}{\bar{p}_c}\right)^{\gamma_{tc}} \left(\frac{p_d}{\bar{p}_d}\right)^{\gamma_{td}} \left(\ldots\right) \quad \ldots\ldots\ldots \quad (20),$$

or, in the logarithmic form,

$$\log\left(\frac{O_t}{\overline{O}_t}\right)=\gamma_{tt}\log\left(\frac{p_t}{\overline{p}_t}\right)+\gamma_{tp}\log\left(\frac{p_p}{\overline{p}_p}\right)+\gamma_{tb}\log\left(\frac{p_b}{\overline{p}_b}\right)+\cdots$$
$$+\gamma_{tb}\log\left(\frac{p_b}{\overline{p}_b}\right)+\gamma_{tc}\log\left(\frac{p_c}{\overline{p}_c}\right)+\gamma_{td}\log\left(\frac{p_d}{\overline{p}_d}\right)+\cdots \quad (21).$$

From (20) we see that, when all the prices are equal to their respective trend-values, the quantity of commodity supplied is equal to its trend-value.

Coefficients of Production

In the preceding two sections the economic theory of elasticity of demand and elasticity of supply gave us a clue to the direction in which to seek typical equations descriptive of both demand and supply. The simple conceptions of elasticity of demand and elasticity of supply led to the more complex conceptions of partial elasticity of demand and partial elasticity of supply, and these new notions enabled us to obtain functions that describe demand and supply in such ways that the constants in the functions represent the partial elasticities. In treating the coefficients of production we shall take as our point of departure another bit of economic theory.

The conception, relative efficiency of organization, which is symbolically represented by ω, has been defined [2] as the ratio of the relative change in total production to the relative change in total cost. If we suppose that Q_c represents the quantity of commodity (C) that is produced and we assume as a first approximation, that the cost consists only of services of persons which are represented in Walras' notation by (P_c), the relation between quantity produced and cost in services may be indicated by

2. "A Moving Equilibrium of Demand and Supply," Quarterly Journal of Economics, May, 1925.

$$Q_c = \Psi_c(P_c) \quad \ldots \quad (22),$$

and the relative efficiency of organization, according to the above definition, would be

$$\omega = \frac{dQ_c}{Q_c} \Big/ \frac{dP_c}{P_c} = \frac{P_c}{Q_c} \cdot \frac{dQ_c}{dP_c} \quad \ldots \quad (23).$$

If, now, the total cost in terms of services is made up of the quantities T_c, P_c, K_c, ..., we have as the expression for the general production function

$$Q_c = \Psi_c(T_c, P_c, K_c, \ldots) \quad \ldots \quad (24).$$

In treating this more complex function we are led, by analogy with the reasoning of preceding sections, to the conception of partial efficiencies of organization which may be symbolically indicated as follows:

$$\left.\begin{aligned} \omega_{ct \cdot ph \ldots} &= \frac{T_c}{Q_c} \cdot \frac{\partial Q_c}{\partial T_c}, \\ \omega_{cp \cdot th \ldots} &= \frac{P_c}{Q_c} \cdot \frac{\partial Q_c}{\partial P_c}, \\ \omega_{ck \cdot tp \ldots} &= \frac{K_c}{Q_c} \cdot \frac{\partial Q_c}{\partial K_c}, \\ \ldots\ldots & \quad \ldots\ldots \end{aligned}\right\} \quad \ldots \quad (25).$$

These symbols are interpreted in a manner similar to that in which other like symbols already described have been understood. For example, take the first equation in (25). Here the equation indicates that in the production of commodity (C) in which the quantities of services employed are T_c, P_c, K_c, ... the partial efficiency of organization with reference to T_c is given on the right-hand side of the equation. The symbol $\omega_{ct \cdot ph \ldots}$ is a summary representation of the mathematical procedure.

The partial efficiencies of organization, the values of which are given in (25), supply a clue to a method of

computing Walras' coefficients of production. The quantities $\frac{T_c}{Q_c}, \frac{P_c}{Q_c}, \frac{K_c}{Q_c}, \ldots$ which appear in the expressions on the right-hand side of equations (25) are Walras' coefficients of production. In Walras' notation $\frac{T_c}{Q_c} = c_t$; $\frac{P_c}{Q_c} = c_p$; $\frac{K_c}{Q_c} = c_k$; ... By utilizing equations (25), these coefficients of production may be written

$$\left.\begin{aligned} c_t &= \omega_{ct \cdot pk} \ldots \Big/ \frac{\partial Q_c}{\partial T_c}, \\ c_p &= \omega_{cp \cdot tk} \ldots \Big/ \frac{\partial Q_c}{\partial P_c}, \\ c_k &= \omega_{ck \cdot tp} \ldots \Big/ \frac{\partial Q_c}{\partial K_c}, \\ \ldots & \quad \ldots\ldots \quad \ldots \end{aligned}\right\} \quad \ldots\ldots\ldots \quad (26).$$

The problem of the values of the coefficients of production will obviously be solved if we can find the values of the quantities on the right-hand side of equations (26).

The first step toward the solution is to find a typical function that will serve to describe production; that is to say, we must discover the empirical form of the function

$$Q_c = \Psi_c (T_c, P_c, K_c, \ldots).$$

By following the method employed in previous sections the production function may be put in the form

$$\frac{Q_c}{\overline{Q}_c} = \Psi_c \left(\frac{T_c}{\overline{T}_c}, \frac{P_c}{\overline{P}_c}, \frac{K_c}{\overline{K}_c}, \ldots \right) \quad \ldots\ldots\ldots \quad (27).$$

If, as a first approximation, the partial efficiencies of production are assumed to be constant and equal respectively to $\epsilon_{ct}, \epsilon_{cp}, \epsilon_{ck}, \ldots$ the general production function will take the form

$$\frac{Q_c}{\overline{Q}_c} = \text{constant} \left(\frac{T_c}{\overline{T}_c} \right)^{\epsilon_{ct}} \left(\frac{P_c}{\overline{P}_c} \right)^{\epsilon_{cp}} \left(\frac{K_c}{\overline{K}_c} \right)^{\epsilon_{ck}} \left(\ldots \right) \ldots (28).$$

By resorting to the method of simplification employed in previous sections we may write the constant coefficient in (28) equal to unity, which will give

$$\frac{Q_c}{\overline{Q}_c} = \left(\frac{T_c}{\overline{T}_c}\right)^{\epsilon_{ct}} \left(\frac{P_c}{\overline{P}_c}\right)^{\epsilon_{cp}} \left(\frac{K_c}{\overline{K}_c}\right)^{\epsilon_{ck}} \left(\cdots\right) \quad \ldots \quad (29),$$

or, in logarithmic form,

$$\log\left(\frac{Q_c}{\overline{Q}_c}\right) = \epsilon_{ct} \log\left(\frac{T_c}{\overline{T}_c}\right) + \epsilon_{cp} \log\left(\frac{P_c}{\overline{P}_c}\right) + \epsilon_{ck} \log\left(\frac{K_c}{\overline{K}_c}\right) + \cdots \quad (30).$$

From equation (29) we see that, when the quantities T_c, P_c, K_c, ... have their trend-values, the quantity Q_c likewise has its trend-value.

By means of equation (30) the partial efficiencies of organization may be empirically determined. Their determination will supply one of the quantities needed to evaluate, by means of equations (26), the coefficients of production. Assuming that the ϵ's, the constant partial efficiencies of organization, have been empirically ascertained by means of (30), equations (26) may be written

$$\left.\begin{aligned} c_t &= \epsilon_{ct} \Big/ \frac{\partial Q_c}{\partial T_c}, \\ c_p &= \epsilon_{cp} \Big/ \frac{\partial Q_c}{\partial P_c}, \\ c_k &= \epsilon_{ck} \Big/ \frac{\partial Q_c}{\partial K_c}, \\ &\cdots \quad \cdots \end{aligned}\right\} \quad \ldots \quad (31).$$

We have now to come to a decision as to the best values to give to the partial derivatives on the right-hand side of the equations (31).

Again, economic theory supplies the clue. According to the productivity theory of distribution the utilization

of each factor in production is carried to the point where the value of the product imputed to the final increment of the factor is just equal to the price of the increment of the factor. This theory would require in the present circumstances [3] that

$$\left.\begin{aligned} \frac{\partial Q_c}{\partial T_c} \cdot \Delta T_c \cdot p_c &= \Delta T_c \cdot p_t, \\ \frac{\partial Q_c}{\partial P_c} \cdot \Delta P_c \cdot p_c &= \Delta P_c \cdot p_p, \\ \frac{\partial Q_c}{\partial K_c} \cdot \Delta K_c \cdot p_c &= \Delta K_c \cdot p_k, \\ \cdots \quad \cdots \quad \cdot\cdot \quad \cdots \quad \cdot\cdot & \end{aligned}\right\} \quad \cdots\cdots\cdots \quad (32).$$

Equations (32) become, by an obvious simplification,

$$\left.\begin{aligned} \frac{\partial Q_c}{\partial T_c} &= \frac{p_t}{p_c}, \\ \frac{\partial Q_c}{\partial P_c} &= \frac{p_p}{p_c}, \\ \frac{\partial Q_c}{\partial K_c} &= \frac{p_k}{p_c}, \\ \cdots \quad \cdot\cdot & \end{aligned}\right\} \quad \cdots\cdots\cdots\cdots\cdots \quad (33).$$

There is a condition implied in the productivity theory of distribution of which notice must be taken before equations (33), which have been reached through the application of the productivity theory, can be put in their final shape. The productivity theory postulates a condition of equilibrium. The prices of marginal products are equal to the prices of the responsible marginal factors only when production has reached the stage of minimum cost, which is a stage of theoretical equilibrium. In order that equations (33) may be true to the implicit assumption of equilibrium, the p's must be given the values that would be attained in a state of equilibrium.

3. Walras: Note sur la Réfutation de la théorie Anglaise du Fermage de M. Wicksteed. Lausanne, 1896, p. 10.

What are the most probable values that should be assigned to the p's? The method we have followed in the derivation of the empirical laws of demand and supply throws light on the question. The typical laws of demand and supply are, according to equations (14) and (20),

$$\frac{D_c}{\overline{D}_c} = \left(\frac{p_t}{\overline{p}_t}\right)^{\beta_{ct}} \left(\frac{p_p}{\overline{p}_p}\right)^{\beta_{cp}} \left(\frac{p_k}{\overline{p}_k}\right)^{\beta_{ck}} \left(\cdots\right) \left(\frac{p_b}{\overline{p}_b}\right)^{\beta_{cb}} \left(\frac{p_c}{\overline{p}_c}\right)^{\beta_{cc}} \left(\frac{p_a}{\overline{p}_a}\right)^{\beta_{ca}} \cdots$$

$$\frac{O_t}{\overline{O}_t} = \left(\frac{p_t}{\overline{p}_t}\right)^{\gamma_{tt}} \left(\frac{p_p}{\overline{p}_p}\right)^{\gamma_{tp}} \left(\frac{p_k}{\overline{p}_k}\right)^{\gamma_{tk}} \left(\cdots\right) \left(\frac{p_b}{\overline{p}_b}\right)^{\gamma_{tb}} \left(\frac{p_c}{\overline{p}_c}\right)^{\gamma_{tc}} \left(\frac{p_a}{\overline{p}_a}\right)^{\gamma_{ta}} \cdots$$

In both of these cases we found that the average of the price-ratios $\left(\frac{p}{\overline{p}}\right)$ is unity. Consequently on the average, at any particular time, the most probable value of p is its trend-value $\overline{p}$. If we assume that these average, most probable values are the values toward which the forces at work are urging the movement of prices, we may substitute them for the equilibrium prices postulated in the productivity theory. If these substitutions are made, equations (33) become

$$\left.\begin{aligned} \frac{\partial Q_c}{\partial T_c} &= \frac{\overline{p}_t}{\overline{p}_c}, \\ \frac{\partial Q_c}{\partial P_c} &= \frac{\overline{p}_p}{\overline{p}_c}, \\ \frac{\partial Q_c}{\partial K_c} &= \frac{\overline{p}_k}{\overline{p}_c}, \\ \cdots \quad & \quad \cdots \end{aligned}\right\} \quad \cdots\cdots\cdots\cdots\cdots \quad (34).$$

By substituting in equations (31) the values of the partial derivatives given in (34), we obtain the values of the coefficients of production, namely,

$$\left.\begin{aligned} c_t &= \epsilon_{ct}\frac{\bar{p}_c}{\bar{p}_t}, \\ c_p &= \epsilon_{cp}\frac{\bar{p}_c}{\bar{p}_p}, \\ c_h &= \epsilon_{ch}\frac{\bar{p}_c}{\bar{p}_h}, \\ \cdot\cdot &\quad \cdot\cdot\cdot\cdot \end{aligned}\right\} \quad \cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot\cdot \quad (35).$$

All these quantities may be empirically, statistically determined.

A Moving General Equilibrium

We have now the means by which to pass from Walras' hypothetical, statical general equilibrium to a real, moving general equilibrium. Walras' problem is solved by means of his four groups of equations (1), (2), (3), (4), all of which are hypothetical and apply only to the theoretical static state. For each of his groups we may now substitute equations that may be statistically evaluated and that apply to the actual changing economy.

In place of Walras' representative demand equations (1) we substitute demand equations of which the type is (14), that is,

$$\frac{D_c}{\bar{D}_c} = \left(\frac{p_t}{\bar{p}_t}\right)^{\beta_{ct}}\left(\frac{p_p}{\bar{p}_p}\right)^{\beta_{cp}}\left(\frac{p_h}{\bar{p}_h}\right)^{\beta_{ch}}\left(\cdot\cdot\cdot\right)$$
$$\left(\frac{p_b}{\bar{p}_b}\right)^{\beta_{cb}}\left(\frac{p_c}{\bar{p}_c}\right)^{\beta_{cc}}\left(\frac{p_d}{\bar{p}_d}\right)^{\beta_{cd}}\left(\cdot\cdot\cdot\right) \quad \cdot\cdot\cdot\cdot \quad (36).$$

In place of his representative supply equations (2) we substitute supply equations of which the type is (20), that is,

$$\frac{O_t}{\bar{O}_t} = \left(\frac{p_t}{\bar{p}_t}\right)^{\gamma_{tt}}\left(\frac{p_p}{\bar{p}_p}\right)^{\gamma_{tp}}\left(\frac{p_h}{\bar{p}_h}\right)^{\gamma_{th}}\left(\cdot\cdot\cdot\right)$$
$$\left(\frac{p_b}{\bar{p}_b}\right)^{\gamma_{tb}}\left(\frac{p_c}{\bar{p}_c}\right)^{\gamma_{tc}}\left(\frac{p_d}{\bar{p}_d}\right)^{\gamma_{td}}\left(\cdot\cdot\cdot\right). \quad \cdot\cdot\cdot\cdot \quad (37).$$

In place of the hypothetical constant coefficients of production by means of which Walras expresses the equations of demand and supply (3), we substitute concrete varying coefficients of production (35), which lead to an equation of demand and supply of which the type is

$$\epsilon_{at}\frac{\overline{p}_a}{\overline{p}_t}D_a + \epsilon_{bt}\frac{\overline{p}_b}{\overline{p}_t}D_b + \epsilon_{ct}\frac{\overline{p}_c}{\overline{p}_t}D_c + \cdots = O_t \qquad (38).$$

In place of Walras' equations of cost and price (4), which depend upon the assumption of hypothetical coefficients of production, we substitute others containing real coefficients of production (35), of which the type is

$$\epsilon_{ct}\frac{\overline{p}_c}{\overline{p}_t}p_t + \epsilon_{cp}\frac{\overline{p}_c}{\overline{p}_p}p_p + \epsilon_{ch}\frac{\overline{p}_c}{\overline{p}_h}p_h + \cdots = p_c \ldots \qquad (39).$$

These four groups of equations, like Walras', determine the general equilibrium, but the equilibrium with which they are concerned is real and not hypothetic, is moving and not static.

It is a moving equilibrium about the lines of general trend. This may be seen to be true if in the four groups of typical equations the trend-prices are substituted for the actual prices. If the trend-prices are substituted for the actual prices in the typical demand equation (36), D_c becomes $\overline{D}_c$; if they are substituted in the typical supply equation (37), O_t becomes $\overline{O}_t$; the typical equation of demand and supply becomes

$$\epsilon_{at}\frac{\overline{p}_a}{\overline{p}_t}\overline{D}_a + \epsilon_{bt}\frac{\overline{p}_b}{\overline{p}_t}\overline{D}_b + \epsilon_{ct}\frac{\overline{p}_c}{\overline{p}_t}\overline{D}_c + \cdots = \overline{O}_t$$

and the typical equation of cost and price becomes

$$\epsilon_{ct} + \epsilon_{cp} + \epsilon_{ch} + \cdots = 1$$

At this point I should like to make a brief digression, in order to indicate how the productivity theory of distribution may be tested statistically. There are three

cardinal features of that doctrine which seem to present insuperable obstacles in the way of statistical testing: (*a*) The productivity theory obtains only when consumption and production have reached a stage of equilibrium. But how may one know when that state of equilibrium is reached? (*b*) The productivity theory applies to marginal increments. But how may one isolate the marginal quantities? (*c*) The productivity theory asserts that each factor in production receives an income equal to the number of units of the factor multiplied by its marginal product. But can one prove that the sum of all the several incomes determined by this formula is equal to the product of industry? All three of these difficulties may be removed by the preceding analysis.

(*a*) The theory of a moving general equilibrium which has just been elaborated meets the first difficulty. We have shown that the entire economic system oscillates about a general equilibrium moving along the lines of secular trends of prices and products. Trend-prices and trend-products are equilibrium prices and products.

(*b*) The empirical derivation of the production function (29), namely,

$$\frac{Q_c}{\overline{Q}_c} = \left(\frac{T_c}{\overline{T}_c}\right)^{\epsilon_{ct}} \left(\frac{P_c}{\overline{P}_c}\right)^{\epsilon_{cp}} \left(\frac{K_c}{\overline{K}_c}\right)^{\epsilon_{ck}} \left(\cdots\right),$$

meets the second difficulty. When the statistical values of the constants in that equation have been determined the marginal product of any factor may be immediately calculated. For example, the product of ΔT_c would be

$$\frac{\partial Q_c}{\partial T_c} \cdot \Delta T_c.$$

(*c*) A transformation of equation (39) meets the third difficulty.[4] Equation (39) may be written

4. Here I make use of a hint given by Walras in his Note sur la Réfutation de la théorie Anglaise du Fermage de M. Wicksteed (Lausanne, 1896), pp. 9, 10.

$$\left(\epsilon_{ct}\frac{\bar{p}_c}{\bar{p}_t}\right)\frac{p_t}{p_c}+\left(\epsilon_{cp}\frac{\bar{p}_c}{\bar{p}_p}\right)\frac{p_p}{p_c}+\left(\epsilon_{ck}\frac{\bar{p}_c}{\bar{p}_k}\right)\frac{p_k}{p_c}+\cdots=1 \quad \ldots \quad (40).$$

The quantities in parentheses are the coefficients of production. By multiplying the equation through by Q_c, (40) becomes

$$T_c\frac{p_t}{p_c}+P_c\frac{p_p}{p_c}+K_c\frac{p_k}{p_c}+\cdots=Q_c \quad \ldots \quad (41).$$

Now when the economic system is in a state of equilibrium, the productivity theory is supposed to hold, and we have shown that, when equilibrium is reached, equilibrium prices are trend-prices and equilibrium products are trend-products. By substituting equilibria values in (41) we have

$$\bar{T}_c\frac{\bar{p}_t}{\bar{p}_c}+\bar{P}_c\frac{\bar{p}_p}{\bar{p}_c}+\bar{K}_c\frac{\bar{p}_k}{\bar{p}_c}+\cdots=\bar{Q}_c \quad \ldots \quad (42).$$

By equation (34) we may substitute partial derivatives for the values of the price-ratios in (42) and obtain

$$\bar{T}_c\frac{\partial\bar{Q}_c}{\partial\bar{T}_c}+\bar{P}_c\frac{\partial\bar{Q}_c}{\partial\bar{P}_c}+\bar{K}_c\frac{\partial\bar{Q}_c}{\partial\bar{K}_c}+\cdots=\bar{Q}_c \quad \ldots \quad (43).$$

which is a proof, in a form that may be statistically tested, of the proposition that in a state of equilibrium the product of industry is divided according to the productivity formula.

Economic Oscillations

In the beginning of this essay economic oscillations were defined as complete fluctuations of economic quantities about their normal position of equilibrium. The equilibria about which the oscillations occur were classified as either static or moving, and a distinction was drawn between periodic oscillations, or cycles properly so-called, and non-periodic oscillations. The theory of

periodic oscillations I have treated elsewhere, and we have now to consider the non-periodic oscillations about moving equilibria.

The solution of the mystery of non-periodic oscillations is found in the establishment of the theory of a moving equilibrium. The theory of general equilibrium makes clear that four classes of equations are essential to establish the conditions of equilibrium: these are (*a*) equations of demand for commodities as functions of all prices; (*b*) equations of supply of services as functions of all prices; (*c*) equations of equality of demand and supply in case of productive services; (*d*) equations of equality of cost and price of commodities. The coexistence of these conditions entails the movement of the whole economic system toward a stable equilibrium.

Once the equilibrium is established, any deviation of any price, any deviation of any product, any deviation of any quantity of any service, or of any coefficient of production, from the equilibrium values required by the four groups of equations sets up a perturbation with repercussions, in consequence of the nexus of the equations, throughout the whole economic system. These disturbances with the actions and reactions make up the non-periodic economic oscillations.[5]

5. Pareto in his early investigations seemed to be working toward this theory. One of his earliest essays was an attempt to derive an empirical law of demand ("La legge della domanda," Giornale degli Economisti, 1895), and the chapter of his Cours d'Économie Politique dealing with "Les Crises Économiques" has most suggestive hints. But he did not discriminate between the causes of periodic and of non-periodic oscillations; he never solved the problem of a moving general equilibrium; and he did not devise methods for evaluating empirically any one of the four groups of equations essential to the determination of a moving general equilibrium. Indeed, in his last years, in contrast with the aspiration of his early work, he seemed to abandon all hope of getting empirical laws of demand and supply and of approaching nearer to concrete reality through a statistical treatment of the functions in the theory of general equilibrium. "Dalle statistiche delle quantità di una merce prodotta o recata sul mercato e dai prezzi di detta merce non si possono

Conclusions

(1) There are three stages in the development of the theory of general equilibrium. In the first stage, the whole economic system is seen as a complex of interdependent parts, the interrelations of which must be apprehended before the working of any single part can be adequately understood. Cournot was the first to see clearly this characteristic of social science and to suggest the method appropriate to its treatment. In the second stage, the device of the static state is introduced, and the interrelations of the parts of the economic system are enumerated and expressed symbolically in the form of general equations. Walras and Pareto worked out this part of the general problem. In the third stage, the transition is made from statics to dynamics, and the equations expressing the relations between the parts of the economic system receive the definite, numerical form in which theory admits of empirical testing. The object of the present paper is to treat this phase of the subject.

(2) A distinction is made between periodic oscillations, or cycles properly so-called, and non-periodic oscillations, and the argument assumes that the general phenomenon of oscillations may be understood only when these two types of oscillations are recognized as having different kinds of causes.

(3) The theoretical analysis leads to a formulation of the new conceptions of partial elasticity of demand,

ricavare le leggi dette dell'offerta e della domanda. Quando gli economisti dissero che crescendo l'offerta scema il prezzo, espressero la legge di un fenomeno ideale, il quale rare volte traspare nei fenomeni concreti, ed è illusione il credere che ci avviciniamo maggiormente al concreto muovendo dalle leggi dell'offerta e della domanda piuttostochè dalla considerazione dell 'utilità dei primi economisti, della marginal utility, della rareté, dell' ofelimità di economisti posteriori, per costituire le teorie dell 'Economia." Pareto, Trattato di Sociologia Generale (first edition), vol. ii, p. 724.

partial elasticity of supply, and partial efficiency of organization.

(4) By means of these conceptions it becomes possible to express demand, supply, and physical productivity in forms in which their constants may be statistically determined.

(5) The marginal productivity theory of distribution is so formulated that the chief propositions in the theory may be submitted to statistical tests.

(6) The problem of a moving general equilibrium is solved, and the solution is expressed in terms that admit of immediate practical application.

(7) The solution of the problem of general equilibrium reveals the essential part that is played by statical forces in the phenomena of economic oscillations.

(8) Economic oscillations, other than periodic oscillations or cycles properly so-called, are the consequence of statical forces compelling the economic system toward a moving general equilibrium whenever, from any disturbing cause, there is a departure from the specified conditions of the moving general equilibrium.

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THE NATURE AND FUNDAMENTAL ELEMENTS OF COSTS

SUMMARY

The historical development of the theory of costs has been away from the disutility analysis of the classicists. — The view that costs are payments for the means of production, arising out of the resistances which they occasion, and set in a competitive price-bidding process, 36. — These resistances resolved into eight scarcity-factors, which are the fundamental elements of costs, 41. — The analysis applied to costs encountered in business enterprise: wages, interest, rents, depreciation, insurance, taxes, and profits. — All can be broken down into the eight elements named 47. — The introduction of monopoly profits into the prices of materials necessitates a distinction between competitive and restrictive costs, 59. — This analysis of costs suggests that an approach to the theory of distribution along similar lines would be fruitful, 62.

THE costs of production which enterprisers incur in the conduct of their businesses are pecuniary in nature. They consist of the payments which must be made for various requisites of production, such as labor, raw materials, and so on, in the raising, manufacturing, or marketing of commodities and in the rendering of services. For the theory of value, however, economists have found it necessary to seek some ultimate "real" or "physical" costs lying back of these monetary outlays. This is because it is the purpose of value theory to explain what fixes the prices of commodities; and it does not carry us very far in such an explanation to say that prices depend upon costs, if those costs are found, upon analysis, to consist only of prices themselves. Hence the discovery of the real elements of costs has long been a major problem of economic theory.

By the early classical writers, the costs of a commodity were thought to be based upon the quantity of

labor required to produce it at the margin of cultivation. Monetary outlays were thus supposed to correspond to hours of labor or amounts of labor-pain, and if one commodity cost more than another, it was simply because it had taken more labor to produce it. This is the analysis which was given by Adam Smith for primitive societies, and applied by David Ricardo, with slight modifications, for more complexly developed communities. Senior, however, made it obvious that the savings of capitalists, necessary for production, had to be paid for as well as the efforts of labor, and that these payments for abstinence, as he called it, played a significant part in the fixing of values. Payments for labor-pain and payments for abstinence, however, had this much in common: they both represented human sacrifices, mental or physical, required in production. It could be said, then, that real costs consisted of the sacrifices, or disutilities of production. According to this theory, if one commodity was more valuable than another, it was because its production had required more effort, or more abstinence, or both. Land rents were supposed to play no part in fixing values, because the latter were fixed at the margin where rents did not appear. Differences of wages were not entirely ignored, but their significance for value theory was not understood. Either they were explained as representing differences in the attractiveness or expense of learning of the various trades, and therefore resolvable into labor-pain; or they were dismissed as irrelevant on the ground that, since the lines of labor stratification are permanent over long periods of time, *changes in values* from one period to another are not to be attributed to them.[1] The latter reasoning im-

1. See Ricardo's Political Economy, chap. 1, sect. 2. A line of reasoning similar to Ricardo's has more recently been followed by F. W. Taussig, in his Principles of Economics (3d edition, 1921), chap. 48,

plies that it is not the function of value theory to explain why one commodity has *now* greater value than another, but merely to account for changes in its value from period to period. But this begs the most important and difficult part of the value problem, which is precisely to explain why some things are *now* worth so much more than others are worth.

Cairnes struck at the root of this matter, and showed convincingly the impossibility of the classical doctrine, when he called attention to the existence of non-competing labor groups in society. Values at a given time could be said to rest on disutilities only so long as it was believed that enterprisers' outlays for wages corresponded to the labor-pain suffered by those who were employed. But Cairnes showed that wages do not correspond to labor-pain; that, on the contrary, wage differences are chiefly a matter of scarcity or abundance of the various groups of workers. Hence the high cost of production of a certain commodity is to be attributed not to the great amount of labor-effort which it requires, but to the scarcity of the type of worker; and if the cost of some other commodity is low, it is not because it took very little labor to produce it, but because the type of worker employed is very abundant, and, therefore, cheap. This argument is convincing, and it breaks the connection between wages and disutility, thereby destroying the disutility theory of value.[2]

At about this same time there developed the marginal utility theory of value, which helped to break down the old analysis by shifting the attention of economists from the supply side of the value problem to the demand.

sect. 4. Professor Taussig argues that "Changes in value are commonly due to changes in the quantities of the different kinds of labor called for, that is, to changes in cost [disutility]; tho the general scale of values [at a given time] is the result of demand and utility, not of labor applied."

2. See F. W. Taussig, op. cit., chap. 48, especially sects. 1 and 2.

According to this theory, costs were a sort of pale reflection of utility, the exact relation between them being left somewhat obscure. Apparently the marginal utility theorists did not regard their doctrine as being contradictory to the older cost analysis, but they were not particularly interested in costs, because they regarded them as subordinate.[3]

There now occurred a peculiar distortion of economic terminology. The word *costs* had originally been used, as it still is in popular language, to denote pecuniary expenditures. The classical writers thought that these expenditures could be traced to labor-pain and abstinence, and so they identified costs with disutilities. This identity of the two words had become so fixed in the minds of economists, that it persisted even after the supposed connection between pecuniary outlays and disutilities had been disproved. Instead of restoring the use of the word *costs* to monetary expenditures, therefore, a new term, *expenses*, was employed to denote the latter, and costs and disutilities were regarded as synonymous, as before. Thus the word *costs* was rendered practically useless as a term to be employed in the theory of value.[4] This confusion of words was unfortunate, because if disutilities are not the ultimate factor on the supply side of the value problem, there is no good reason why *costs* should continue to be identified with them, and there is much to be gained by keeping the definition of the word in conformity with popular usage.

3. See, for instance, W. S. Jevons, The Theory of Political Economy, 3d edition, 1888, pp. 186–192 and ff.

4. The association between costs and disutilities was clung to so tenaciously, perhaps, because after all, there remained a half-suppressed conviction that in the long run the expenses of production must correspond to disutilities. Thus, except for short periods (or at least in the *very* long run), the words *costs* and *expenses* would be substantially identical. This appears to be the view of Alfred Marshall, tho he was a little vague on this point. See his Principles of Economics (7th edition), Bk. V, chap. iii, sects. 6 and 7; and Bk. VI, chap. v, sects. 4 to 7, inclusive.

The prices of commodities do coincide with enterprisers' expenses, and they do not correspond with disutilities. It is these expenses, then, which are to be explained, and there is everything to be gained in the way of clarity if we call them by the simple word *costs*. The trend of usage now seems to be in this direction, and is being followed by a number of prominent economists.[5]

Underlying the distinction between *costs* and *expenses*, however, there was an element of reason, for there is something, non-pecuniary in nature, underlying the monetary costs of the market-place. What that something is, and how it is related to pecuniary costs, it is part of the purpose of the present essay to ascertain. In part, costs are physical in their nature, and in part they are psychic. Both of these aspects were recognized in the classical concept of disutility, but that analysis did not go far enough. By the physical elements of costs is meant the amount of human energy expended or of material resources dissipated in production. These could be measured in terms of labor-hours worked, tons of coal consumed, acres of land cultivated, and so on, per unit of product obtained in industry. This is the aspect of costs which we have in mind when we speak of the reduced costs of production brought about by the remarkable increase in technical efficiency that accompanied the Industrial Revolution. These elements of cost are absolute, in the sense that they can be measured in terms of definite, unvarying standards. By the psychic elements of costs are meant the sacrifices undergone in production — the pain of fatigue and disagreeable work, the waiting involved in the roundabout process, and so on. They correspond to the disutility of the classical analysis. These elements, too, are absolute, probably, but psychologists have not yet given us any technique

5. See below, p. 36, note 7.

for measuring them. We can only observe their existence, and infer some of their effects upon the economic process. Both the physical and the psychic aspects of costs differ from the pecuniary aspect. The latter is relative, and measured in monetary terms. The pecuniary aspect is the one which is most obvious in the market-place, and which the theory of value must try to explain. Just how it is related to the physical and psychic aspects of costs further analysis will reveal.

Senior once shrewdly observed that, if all the commodities in existence had come to be here by some miracle, without having had to be produced, and if they existed in exactly the same quantities as at present, the conditions of demand being likewise the same, their values would be exactly the same as they now are. But in that case the values could not be attributed to their costs of production, for there would have been no costs. This ingenious hypothesis shows very neatly the truth, that it is the quantities in which the various commodities are available, relative to the respective demands for them, that determine their values. Therefore, it is only through their effects upon the quantities of goods that the influence of costs upon goods can be exerted. We should do well, then, to look for the sources of costs in the conditions that make goods more or less abundant. A good does not have value at all unless its quantity is limited, relative to the demand for it; and the greater its scarcity, relative to the demand, the higher its value will be. Whatever conditions make goods scarce, therefore, are the determinants of their values, so far as supply is concerned. What, then, are the sources of scarcity? It is here that the physical and psychic aspects of costs, just described, come into play. The physical means of production, which constitute the physical elements of costs, are limited in quantity. Their

scarcity, therefore, sets limits—usually elastic in nature, because of the principle of diminishing returns — to the production of commodities. The psychic disutilities of production set limits similarly elastic in nature. As H. J. Davenport has expressed it, there are various resistances to production, which resistances are the sources of scarcity. It is the physical and psychic elements above described that give rise to these resistances. We may call them, therefore, the scarcity-factors or resistance-elements of costs.

Just how these resistances give rise to pecuniary costs has been set forth by a number of recent writers, notably by Davenport and Cassel. It is most clearly explained by the doctrine of opportunity or alternative costs.[6] This principle, may be stated thus: The use of any agent in production involves a cost which is determined by its value (that is, by the price offered for it) in its possible alternative uses. Cassel puts it somewhat in this way: It is the function of the pricing process to attach such

6. The concept of opportunity costs appears to have been originated by David I. Green in an article entitled "Pain-cost and Opportunity-cost," which appeared in the Quarterly Journal of Economics (vol. viii, pp. 218–229) in January, 1894. In this article the doctrine is clearly and definitely developed. Its chief expositor, however, has been H. J. Davenport, who worked it out independently of Green, and first published his idea in an article with the title "The Formula of Sacrifice," in the Journal of Political Economy (vol. ii, pp. 561–573) for September, 1894. It was developed more fully in his later writings, and received its most mature expression in his Economics of Enterprise, 1913 ((see especially chaps. 6 and 8). Cassel also, apparently, arrived at the principle independently, and by a line of reasoning quite different from that of the two writers named. See his Theory of Social Economy, English translation, 1924, especially chap. iii, sect. 12. Other writers who have given recognition to the idea are: F. A. Fetter, Economic Principles, 1915, chap. 28; H. D. Henderson, Supply and Demand, 1922, chap. 10; and H. G. Brown, Economic Science and the Common Welfare, 1923, Part II, chap. ii, sect. 3. T. N. Carver, in his Principles of National Economy, 1921, chap. 26, presents a theory of scarcity or resistance costs somewhat different from the one adopted by the present writer, with more emphasis on the disutility aspect of costs, and giving opportunity costs a subordinate position.

prices to the means of production that they cannot be devoted to one use if there is some other more important use to which they might be devoted (that is, if there is an alternative employment for which there is greater demand). Just what is the significance of these statements, and what is the nature of the process by which resistances in the form of scarce productive agents are converted into pecuniary costs, can be made clear by means of a simple illustration.

The tremendous increase in the use of automobiles during the past few decades has created a demand for iron and steel products, for cotton and rubber and leather, for electrical goods, and so on, which did not exist before. In obtaining these things, the automobile industry must compete with other industries which use the same materials. There is competition with the users of iron and steel for building construction, for machinery, for railways, and for other purposes; there is similar competition for cotton (a great quantity of which is used in automobile tires and in upholstery) with the whole cotton goods industry; while the makers of rubber tires must compete with the makers of the various other goods in which rubber is employed. So it goes for every material that enters into the composition of a motor car. Out of such competition there arises a great number of opposing demands for the agents of production which bring these various raw materials and finished products into being. The automobile producers bid against the structural steel contractors for steelworkers and mechanics of various sorts, for capital with which to produce iron and steel, and, ultimately, for the iron mines themselves. They bid against the electric light and power industry for electrical workers, for copper wire and rubber insulation, and for the capital and land without which such products cannot be obtained.

Likewise they bid against the producers of cotton textiles and of rubber goods for the land, labor, and capital essential to the carrying on of their enterprises. Thus, in every phase of the automobile industry, there is a conflict with other industries, which, when reduced to its final terms, becomes a competition for the fundamental agents of production which are essential to the production of automobiles and of most other commodities.

Because of this competitive situation, it is only possible for any one producer or group to secure the supplies of the various agents he needs by offering at least as high a price for them as the others do; for the agents will be offered to those who will pay the most. What each producer can pay depends upon the price which he can get for his finished product, and rests ultimately, therefore, on consumers' demand. If the demand for automobiles is increasing, more mechanics will be needed. The high prices prevailing for automobiles under the conditions of increased demand will make it possible to offer higher wages for mechanics, and some of them will be induced to leave their employments in other iron and steel manufacturing industries. The latter must then raise the wages they are paying, until they are in line with the offers of the automobile producers. This will only be possible by raising the price of the iron and steel products. This process will go on until the rising price of both automobiles and other iron and steel products checks the demands for them and brings them into such an equilibrium as to absorb the available labor supply, and to maintain an equal rate of wages for labor of this type in all its employments. We have here a condition in which the increased demand for automobiles has caused an increase in the wage-costs of making other iron and steel products; but it is equally correct to say

that there was a similar increase in the costs of producing automobiles, for it was only on the condition that higher wages were paid that the increase in the output of motor cars necessary to meet the increased demand was made possible. What has been said of mechanics' wages would apply also to the wages of other sorts of labor, and to the prices of all the other agents of production used in manufacturing an automobile. There would be, for instance, a similar process of competitive bidding for the land from which iron ore or rubber or cotton, as the case may be, can be obtained; and as a result of which, such prices for the use of land will be arrived at as to bring about an equilibrium among the various demands for it. The use of land will then have cost those who employ it in the preliminary or final stages of automobile production whatever price has come to be set upon it by the competing bids of those who would have used it for other purposes; and this cost will appear in the price which the purchasers of the automobiles must pay.[7] All the other agents of production employed in manufacturing automobiles will involve costs which are similarly determined, and the aggregate of these will fix the total selling prices of the finished motor cars.

It appears from this analysis that the costs of production of a commodity are resolvable into a non-pecuniary and a pecuniary element. The non-pecuniary element consists of the physical and psychic resistances encountered in the employment of the scarce means of production. The amount of such resistances in the case of any particular good depends upon the technical conditions of manufacture, and involves questions of en-

7. It follows that, contrary to the classical and neo-classical doctrines, the rent of land is just as much a cost of production as any other item. For a full defense of this position see H. J. Davenport, Economics of Enterprise, chap. 12; and Gustav Cassel, Theory of Social Economy, chap. vii, sect. 29.

gineering, artistic taste, custom, and so on. Altho the producer may vary them within limits, they are largely determined by the prevailing technique of the industry. The pecuniary element consists of the prices set upon the scarcity-factors or productive means by the competitive bidding process above described. How much a commodity costs to produce, therefore, depends both upon the resistances offered by the scarce agents of production and upon the prices of those agents. Hence, if one commodity costs more than another, it is either because its manufacture requires a larger number of agents of production, or because it requires agents which are more valuable, on account of the greater demand for them in their alternative uses. The concept of costs is thus a relative one, involving a comparison between two or more commodities in a competitive pricing process.

Inasmuch as costs involve not only the scarcity aspects of production, but a pricing process as well, it is impossible to consider them solely from the supply side of the value problem, for, as has been shown, they involve the phenomenon of opposing demands. Costs are determined just as much by the demands for the agents of production (and, ultimately, by the demands for finished products) as they are by the physical and psychic resistances. Costs, as they appear in a market problem, always take the form of prices, and prices are the result of both demand and supply influences. This is one respect in which the classical analysis failed, because it sought the ultimate explanation of costs in terms of supply factors alone. A complete explanation of the demand aspect of costs would necessitate an account of how the demands for specific agents of production are derived from consumers' demands for finished goods. This involves the problem of imputing the values of final products to the agents which produced them, a

partially satisfactory answer to which is afforded by the marginal productivity theory of distribution. For the purpose of the present study, however, that aspect of costs need not be probed further. It is enough to know that in some way demands for the agents *are* derived from the demands for finished goods, and that, once given, such demands enter into the fixing of costs in the way that has been described. There then remains for further analysis only a fuller account of the scarcity-factors or resistances which enter into costs. This aspect of the question has been very inadequately treated by both the classical and more recent writers. The major task of the present essay is to ascertain what are the resistances upon which costs rest.

Enough has been said to indicate that these resistances arise out of the physical scarcity of certain productive means, or out of certain psychic disutilities involved in production. These physical and psychic elements may now be set forth in greater detail.

One of the most obvious causes of the scarcity of commodities was the one recognized by the classicists, namely, the fact that production calls for the expenditure of human effort, which effort is irksome. Even the most pleasant kinds of exertion become arduous when long sustained, and this restricts the amount of such kinds of work that can be accomplished. The result is that labor effort is scarce, and can command a price, which price is a cost of production. This cost involves both a physical and a psychic element, for man's capacity for work is limited by his physical strength, as well as by his subjective feeling of fatigue and ennui. It will vary with the amount and kind of work required in a given process. This is apparent in the extra wages paid for over-time, and in the equalizing differences in wages paid for occupations of unequal advantages.

But not all wage differences are of the equalizing sort, and therefore not all wage costs are traceable to the disutility of labor effort. The doctrine of non-competing groups teaches us that there are various grades of manual and mental capacity among men. Some types of ability, such as that of the artist, the professional man, or the business executive, are comparatively rare, and the amount of product that this scarce labor can turn out is definitely limited. Hence, there is great competition to secure the services of such persons, leading to high wages paid to them, and to correspondingly high costs of production where they are involved. On the other hand, labor of the unskilled and semi-skilled sort, being more plentiful, is less of a scarcity-factor in production, and leads to lower wage costs.[8] This element of costs is not of a psychic, but of a physical sort, for it is due not to the disagreeableness, expense of training, or other disadvantages of the higher grade occupations, but to the limited numbers of persons who are endowed with the necessary qualities for work of a given kind. We may call this element of costs payment for ability, therefore, to distinguish it from the payments for effort previously described. It is an element having an important influence on the values of commodities, which influence was almost entirely ignored by the classical writers, and has been slighted even by the neo-classical school.

A third resistance is to be found in the fact that the modern roundabout process of production requires time. Because of this, advances must be made to provide

8. High wages do not always lead to high costs of production per unit of product, for skilled and well-paid labor will sometimes produce more than cheap labor; but in general, where men of ability commanding very high wages are employed, unit costs will be correspondingly great. The high wages paid to skilled engravers, for instance, will increase the cost of silverware that is decorated with their engraving.

capital, and those who make the advances must save, and wait for a return on their investment. From the market point of view it does not matter whether this waiting involves a sacrifice on the part of the capitalist or not. The fact that the supply of savings is scarce is enough to give rise to a cost, for these scarce savings will command a price, set by competitive bidding on the opportunity principle, which enterprisers must pay, and which must, therefore, be covered in the prices of finished goods. The controversy which has been considerably aired by recent writers, as to whether the provision of savings is accomplished with or without subjective disutility on the part of the savers is, therefore, irrelevant, so far as the theory of value is concerned; tho it may be of great significance for determining matters of public policy and social reform.

A fourth source of the scarcity of commodities is to be found in the uncertainties of industry. When production is carried on in advance of sales, there are many risks of loss which someone must bear. The successful completion of the product may be prevented by fire, earthquake, shipwreck or flood. Even if production takes place without mishap there are the chances of loss from adverse market fluctuations. Finally, there are personal risks, borne very largely by laborers, such as the danger of accident, premature old age, occupational disease, and unemployment, which must be considered. In so far as any or all of these risks are not insured against, they involve uncertainties — possibilities of loss or disaster — which someone must bear. Some writers have argued that, since man is by nature a gambler, he enjoys the hazards of industry and takes his chances willingly; from which it is concluded that uncertainty-bearing is not a cost of production at all. Here again, however, whether the bearing of uncer-

tainty involves a subjective sacrifice or not is beside the point, so far as the market problem of value is concerned (however significant it may be for other questions). Even tho there may be persons who enjoy taking chances, who take pleasure in the dangers of business enterprise, if such persons are sufficiently scarce to set limits to production, they will give rise to costs. It is hardly to be doubted that, at least so far as the risks of investment and business responsibility are concerned, the men who have the courage and the judgment to take positions of grave responsibility, or who are willing to risk their fortunes in hazardous investment (irrespective of whether they take pleasure in it or not) are scarce. There is, therefore, competition to secure their services, and they command a price which constitutes a cost. The same thing is true also of certain types of labor in particularly dangerous or otherwise risky employments. The steeple-jack may find a zest amounting to keen enjoyment in his calling, but the number of persons who will submit to such hazards as he runs, whether they enjoy it or not, is small. They can therefore command good wages, which enter into the costs of production.

A fifth cause of scarcity rests in the limited amount of land-space available for production. The term land-space is here used to distinguish those attributes of land which are "original and indestructible" from those which are not, for the costs arising from these two properties of land are different in nature. Fertility is exhaustible and replaceable; it is, therefore, essentially similar to capital, which wears out and can be replaced. Mineral deposits are exhaustible and irreplaceable. They present a separate source of scarcity, to be considered presently. The extent and location of land differ from both of the foregoing in that they can be

neither destroyed nor created. These are the qualities of land which the term land-space is meant to describe. The amount of such land-space is almost rigidly and permanently fixed, and the kinds of it which are most advantageous for production are decidedly scarce. Good building sites, suitable for mercantile pursuits or office buildings, in the hearts of our great cities, for instance, are very limited in quantity, relative to the need for them. Hence, there is eager competition to secure them, leading to fabulous rents which the user of such sites must pay. The price of the products obtained on such land must be high enough to cover this payment, which is, therefore, one of their costs of production. A similar payment for land-space appears in the rents of agricultural lands having a particularly desirable location, or other advantageous, indestructible qualities.

It has already been indicated that the case of mineral deposits is somewhat different from the foregoing, and represents, therefore, a sixth source of scarcity. To this scarcity-factor the term natural materials may be applied. In the production of nearly every commodity some mineral resources, — such as coal, iron ore, and petroleum, — or some other natural materials, must be employed. These exist in certain definite quantities in the ground. Once used up, they cannot be replaced. By virtue of their natural scarcity, they set limits to production of the commodities in the making of which they are used. Hence they command a price which enters into the costs of producing those commodities. This price usually takes the form of a royalty, which represents the market value of each ton of the crude natural produce as it lies in the ground, and is paid to the owner when it is removed.

There are some articles, other than minerals, whose

supply is likewise naturally fixed, such as the paintings of great masters, or the products of a lost art, such as antique stained glass. These will not often give rise to costs of production, because they are for the most part consumers' goods, which are wanted as they are, for themselves alone, rather than as a component part of some other commodity. However, they may occasionally be incorporated into some larger article, in the cost of producing which their prices will be a part. If, for example, an art museum is to be constructed, with windows of genuine medieval stained glass, and ornamented with genuine Greek sculpture, the prices of these will enter into the costs of the completed building; and this element of costs will be very large, owing to the extreme scarcity of the articles in question, relative to the demand for them.

The analysis up to this point includes, it is believed, all the scarcity-factors or resistances that would exist if industry were strictly competitive from start to finish. The existence of monopoly at various points in our industrial system, however, creates here and there an artificial limitation of supply which may be classed as the eighth (and last) source of the scarcity of commodities. If, for instance, a monopoly secures control of the supply of copper, and limits its production, the scarcity of that metal thereby created will cause competition to secure it to be more keen, and its price will rise. The effect is the same if the monopoly first raises the price, and suffers a reduction in sales — the increased price is still to be attributed to the scarcity of copper brought about by the control of its supply by the monopoly. Users of copper will then be compelled to pay the increased price, and all commodities in which that metal is used must rise in price sufficiently to cover it. The resistance created by the monopoly, therefore, has en-

tered into the production of those commodities as an element of costs. A monopoly price set upon any other material or article which enters into the production of some commodity at a later stage in the sequence of industry will similarly appear as a cost of production.

If the foregoing analysis is correct, there are eight sources of scarcity which give rise to payments known as costs. These scarcity-factors or resistances are the elements of cost whose discovery was the object of the analysis. Costs, therefore, resolve themselves into the following:

(1) Payments for effort;
(2) Payments for ability;
(3) Payments for waiting (or saving);
(4) Payments for uncertainty-bearing;
(5) Payments for land-space;
(6) Payments for natural materials;
(7) Payments for production goods naturally fixed in supply;
(8) Payments to monopolies for excess profits on goods under their control.

An examination of the cost accounts of a business enterprise will reveal a very different set of items from those which have just been enumerated. In a typical manufacturing business, for instance, there will be such entries as wages of shop employees, salaries of office force and executive staff, payments for raw materials, advertising and selling expenses (including salesmen's commissions), insurance, interest on borrowed capital, taxes, repairs and replacements, sinking fund for retirement of bonds or other obligations, amounts set aside for depreciation, and possibly other items. A careful consideration of these payments, however, will show that they can be resolved into the fundamental elements

of cost which have been named. Payments for raw materials, for instance, can be broken down into the costs of the effort, ability, waiting, uncertainty-bearing, land-space, and so on, which entered into their production; and advertising expense can similarly be divided into the payments for effort, ability, waiting, land-space, monopoly, etc., which went into the printing of circulars, the writing of advertisements, the posting of bills on signboards or in street cars, and so on. Several of the items, however, present difficulties of analysis. It will be well, therefore, to consider them in further detail.

Take as a starting point, the payments that are made by an enterpriser for labor. This will include not only wages, in the everyday sense of that word, but salaries and commissions as well. These payments, however, do not correspond exactly to the two elements of scarcity which have been attributed to effort and ability. In most cases, payments for effort and ability will make up the major portion of an enterpriser's outlays for labor, but seldom the whole of it. In the case of an employee whose wages are high because of some hazard connected with his work, for instance, there is clearly included a payment for uncertainty-bearing. While the nature of the risks incurred by laborers is somewhat different from that of the risks to which capitalists are subject, they are nevertheless just as real, and perhaps more important. It is entirely proper, therefore, to differentiate whatever recompense they receive for these hazards from the payments which they receive for their ability or effort pure and simple. Moreover, as the laborers become increasingly unionized, and the labor market better organized, it is probable that these risks will be more clearly felt and recognized than is at present the case. The result will be that laborers' risks will have more effect on rates of wages than they have now. It is de-

sirable, therefore, to recognize payment for these uncertainties as an element of costs separate from payments for ability and effort. It is also possible that there may be some element of payment for waiting in the wages of labor. Where laborers are paid by the day, this will not be the case, but where wage-payments are deferred for any considerable period beyond the time when employment begins, the laborer is in much the same position as a capitalist who has invested in material resources: he has invested his labor in the business in advance of payment. In an ideal, quickly responsive labor market, this deferred payment should lead to a slight premium in the wages received, just as an advance of material capital for even a month or a week leads to the payment of interest; but it is doubtful if this influence is actually felt to any significant degree in the labor market at the present time, mainly because wages are ordinarily paid very soon after the performance of the work, so that the employee does not have to undergo any significant waiting period. However, in the case of those occupations requiring a long period of preliminary training, such as medicine, engineering, law, and others of the higher professions, a more important and clearly felt element of waiting is involved. The cost of living, the tuition fees that must be paid, books purchased, and so on, during the student's years of training constitute an investment in personal capital, not unlike the investments in material capital made by the ordinary capitalist. It has long been recognized that this expense of training is a factor making for higher wages, on the equalizing principle. This extra wage paid as compensation for such investment in training, however, is not so much a reward for effort as for waiting. It is substantially similar to the interest on capital derived from ordinary investments. There are instances where yet other elements of

cost enter into wage payments, as when a miner furnishes his own tools and explosives out of his pay, or when a travelling salesman pays his own expenses. It will usually be found, however, that the three principal elements of cost included in wages are payment for effort, for ability, and for the bearing of uncertainty.

In an enterpriser's outlays for interest there are likewise two or more elements of cost. There is, first, the premium for time preference or waiting involved in refraining from the consumption of his capital by the lender. This payment is not necessarily a compensation for the psychic pain of abstinence (whether it is so regarded depends on the theory of interest one accepts), but it is at least a payment for the scarcity of waiting, no matter to what cause or causes such scarcity may be ascribed. Second, there is some compensation for his risk of loss, which is never entirely absent even in the safest of investments. These two elements are quite generally recognized in current interest theories by the distinction commonly made between pure and gross interest; but the separation has not been clearly made in the usual analysis of costs.

As the word interest is used in ordinary business parlance (and by some economists) it includes also payments for the use of land. The business man does not divide his capital into that part which was created by nature and that part which was saved and produced by human beings, but lumps it all together as the material equipment of his enterprise. The interest he pays for the use of this capital, therefore, will include what in economics is known as ground rent. It has already been shown that this ground rent is composed of two factors — payments for land-space and for natural materials. It contains other elements also, however, which have not been generally recognized. Land can depreciate

while in the hands of a tenant, through the exhaustion of valuable properties (mainly fertility) which it contains. Unlike natural materials, however, these properties are not irreplaceable. They can be restored through proper measures of fertilization or other treatment. A good tenant will return the rented land to its owner in as good condition as when he received it, but a poor tenant will not. The owner, therefore, must make provision for this uncertainty in the rent he charges for the land. It seems probable, therefore, that there is an element of payment for uncertainty-bearing in the ordinary rent of land. An alternative method of treating this factor is to regard the depletion of natural fertility as an ordinary case of depreciation, a charge for which is introduced into rent. Just what elements of cost are included in depreciation will be discussed below.

Included in an enterpriser's cost accounts may be an item for rents, by which he means, not the ground rents of the economist, but payments for the hire of any specific articles of capital, usually real estate, which he leases from their owners for a consideration. That part of such rents which is paid for improvements can be resolved into payments for waiting, for uncertainty-bearing, for the expense of collections and similar items, and for maintenance and depreciation. Collections can be further resolved into payments for effort, ability, uncertainty-bearing, etc., on the part of real estate agents or solicitors who look after the owner's interests, and maintenance into those for effort, ability, waiting, uncertainty-bearing, natural materials, etc., required to employ labor and to buy materials for keeping the property in repair. The treatment of depreciation will again be deferred to a later paragraph. It appears from this analysis that the "rent" of improvements on real estate includes two elements which do not appear in

ordinary interest. When a man makes a money loan, he expects to receive back his capital intact at the time of its maturity, and he is relieved of all responsibility for the care of his capital in the meantime. He need charge for its use, therefore, only a premium for waiting and for uncertainty-bearing, plus, perhaps, minor costs such as underwriting, advertising, etc. But when he leases a piece of property, he, as owner, usually — or at least very frequently — must keep it in repair, and he must expect to receive it back at the expiration of the lease in a somewhat depreciated condition. He must make a charge for these costs, therefore, in fixing the "rental" which the tenant must pay. It is a mistake, then, to identify the "rent" of artificial capital with its "interest," as is very commonly done by economic theorists. That part of commercial rentals which is paid for land, as distinct from improvements thereon, can be resolved into payments for land-space, for natural materials, and for uncertainty-bearing (or depreciation), as was done in the preceding paragraph. It will not be necessary, therefore, to repeat the discussion.

It has been pointed out not only that a charge for depreciation may appear as a separate, recognized cost in the accounts of a business enterprise, but that it is often concealed also in the complex items listed as interest and rent. It is apparent that what it costs to produce a commodity includes not only the immediate outlays for wages, interest, raw materials, and the like, but also the slow wear and tear on buildings, machinery and equipment which are employed in the process. Provision for the eventual replacement of this worn-out or obsolete equipment is a necessary cost entering into the prices which consumers must pay for finished commodities because, if the industrial equipment is not maintained intact, those commodities cannot long continue to be

produced. The prices must be high enough to evoke a continuous supply of the necessary capital, and if it falls below that, production of the commodities concerned will fall until their scarcity causes the price again to rise. Depreciation fits the formula, therefore, that costs arise out of scarcity. Such depreciation, however, is not an elemental cost. It can be broken down into the labor, materials, land, capital and other productive resources required to replace the worn-out capital, and these, as has been shown, can be further resolved into the eight elements of cost which have been enumerated. Depreciation is just a book-keeping device for making a commodity bear the cost of the original fixed capital which was required to produce it. It is not that the provision of new capital for future production is a cost of producing the present flow of commodities, but that the provision of the original capital is such a cost, for which those who supplied it must be recompensed. Hence, the receipts from current sales must not only pay interest on the investment, but must pay back the principal. If the owners then choose to use the repayment for replacement of the original capital, in order that production may continue, they may do so; but it is the fact that the original capital had to be supplied, and not the provision of new capital now, that makes it a present cost of production. If we regard the process of producing any commodity as a continuous flow over a long period of time, however, this distinction loses its force, and depreciation becomes merely the cost of maintaining a permanent supply of fixed capital for a continuous productive process.

The provision of a sinking fund to retire bonded or other indebtedness in a business is essentially similar to this matter of depreciation. It is a cost in the same sense, in that it is a device for making the present flow of com-

modities bear their share of the cost of the original capital which their production required. In the long run, the production of the commodities concerned could not be sustained unless the sinking fund necessary to maintain the capital intact were provided. Such provision for sinking funds will be found to divide into the same elements of cost as in the case of depreciation. The difference between a sinking fund to retire indebtedness and a depreciation fund, in fact, is analogous to the difference drawn by business men between interest and rent. Interest, in its business usage, is the price paid for the use of a sum of money, and an ordinary sinking fund is provided for the return of a loan of a sum of money; rent is the price paid for the use of a particular item of capital (especially real estate), and a depreciation fund is laid aside to replace worn-out particular items of capital. There is no other essential difference. They are both alike, therefore, for the problem of costs, and both can be resolved into the same elements.

An interesting problem of cost analysis is presented by the enterprisers' outlays for insurance. At first thought one might be inclined to class these as payments for uncertainty-bearing; but the fundamental principle of genuine insurance is that, by consolidating risks, it eliminates uncertainty, and makes the losses to be anticipated from specific hazards definitely known and calculable. In this connection the distinction drawn by Professor Frank H. Knight between risk and uncertainty is illuminating.[9] Insurance has removed the element of uncertainty from some business risks. The cost of insurance, therefore, is not a payment for uncertainty-bearing. The latter arises only where producers must be compensated for subjecting themselves to hazards

9. See his Risk, Uncertainty and Profit (Houghton Mifflin Company, 1921), pp. 19 ff.

which are unpredictable and cannot, therefore, fully be provided for. What elements of cost, then, are represented by insurance? In the production of commodities, certain losses, such as those from fire, flood, wreck, personal injury, sickness, etc., are bound to occur. This means that a certain amount of the labor, capital, and land employed in production is wasted. This waste is a physical cost of production, chargeable to those commodities whose production is successfully consummated. Through the institution of insurance this waste is nicely calculated and apportioned among the various commodities that are brought to the market. In other words, in the costs of producing any commodity are included not only the out-lays for the specific agents of production that entered into it, but also a share of the expense of those agents of production that are lost or misused in the general industrial process, in so far as those losses are foreknown and calculable. These losses can be resolved into the fundamental elements of costs revealed by the previous discussion. Insurance, therefore, does not present any new elements to be added.

A much more difficult problem is presented by the case of taxes. Taxes represent, of course, the costs of maintaining the activities of government, and are resolvable into the payments for effort, ability, waiting, uncertainty-bearing, land-space, natural materials, naturally scarce and monopolized articles that the performance of those activities requires. The difficulty arises when an attempt is made to explain the share of these costs which is born by any particular commodity. In the case of those enterprisers' expenses which have already been considered, the amount of these attendant upon the production of any one commodity arose naturally out of the production process itself, and was determined by the quantities of the various means of produc-

tion which its manufacture required. But taxes do not arise naturally out of the productive process; they are imposed forcibly by an external agency, and the amount of them which shall be borne by any one product does not, in most cases, depend upon the quantities of any particular means of production or governmental services that are employed directly in producing it. It depends rather on the will of the legislative authority in formulating its tax program. The problem is further complicated by the question of the incidence of taxation. To what extent taxes levied on industry give rise to higher prices and are to be construed, therefore, as costs of production, is a matter of controversy, to enter which would be far beyond the scope of the present paper. It may suffice for present purposes to treat taxes somewhat after the manner of insurance. That is, it may be said that there are certain costs of government, incidental to the carrying on of industry, which must be apportioned in some manner among the several commodities, and will be reflected in the prices thereof. The exact manner of the apportionment depends upon the nature of taxation, and the economic laws of incidence. The significant fact for the present study is that these costs of government are made up, in the last analysis, of the same eight fundamental elements which have been observed in the other cases.

In all this, nothing has yet been said about the profits of enterprisers. The average business man regards his profits as a surplus remaining after deducting his expenses from his selling prices, and therefore does not commonly regard these profits as a cost. It has long been recognized by economists, however, and is coming to be recognized by business men, that there are certain elements of profits which are properly classed as costs of production. No business is truly profitable which

does not yield to its proprietors a salary for the time they expend in planning and supervision, and in addition, at least as large a return on whatever capital of their own they have invested in it as they could have received in the loan market. In the long run, if the prices prevailing for any commodity are not high enough to provide such revenues to the representative enterprisers engaged in producing it, its production cannot be maintained. Wages of management and interest on enterprisers' own capital, therefore, are costs of production which enter into the values of commodities, and represent payments which consumers thereof must make if a supply of such commodities is to be continuously available. These wages of management and interest charges can be broken down into the same elements of cost as ordinary wages and interest. There is another cost element in profits which enters into values, namely, uncertainty-bearing. Because of the peculiar responsibilities of his position, the enterpriser assumes certain risks which cannot be passed on to others by insurance, hedging, or other means. It follows from what has been said about uncertainty-bearing as a cost that such assumption of risks upon the part of business enterprisers will command a price in the market in the long run, which price must be covered by the prices of commodities. All this applies, however, only to long-run or normal values. Market fluctuations from day to day, from week to week, and from month to month, may cause prices to fluctuate above or below the full costs of production, affording to enterprisers more or less than wages of management, interest on capital, and reward for the uncertainties of their position; but the average of prices over a considerable period of time must cover such costs for the representative producers in the trade.

Economists have been wont to distinguish between

gross profits and pure profits, the latter term being ordinarily used to designate those revenues of an enterpriser which are in excess of interest on his capital and wages of management. It would appear that at least a part of these pure profits, namely, that portion which can properly be regarded as a payment for uncertainty-bearing, is a true cost of production. But there may be a surplus element in pure profits even exceeding such compensation. If this appears at one of the earlier stages of production, it will be reflected in the price of the commodity concerned at each subsequent stage until it reaches the final consumer. For instance, suppose that a temporary shortage of aluminum leads to a high price for the metal, yielding a considerable profit to its producers above all ordinary costs. This high price of aluminum will be reflected in correspondingly high prices for all products, such as aluminum kitchen utensils, in which aluminum is used. Can it then be said that the excess profits of aluminum refiners was one of the costs of producing the kitchen ware? The makers of the latter will certainly regard it (unconsciously) as a cost, for it enters into the price of their raw material. In explaining actual market prices, this element can hardly be ignored by the economist, for it is obvious that, for the time being, the scarcity of aluminum is a source of scarcity of the goods which are made of it, and the high price set upon aluminum as a result of competitive bidding for it has exactly the same effect upon the prices of aluminum goods as does the price of any scarce agent of production, such as labor-effort or waiting. But this element of cost is temporary, while the other elements which have been enumerated are permanent. The former does not enter into that long-run equilibrium, or normal value, which represents the point toward which the prices tend; the latter do. Mar-

shall has shown very ably the necessity of distinguishing between long and short periods in value analysis. The concept of costs is most useful when applied to long-run prices. In this case, excess profits (above wages of management, interest, and reward for uncertainty-bearing) will not enter as costs, because the long-run influence of competition works for their elimination. In normal (that is, long-period) values no such costs will appear.

The case is different, however, where monopoly profits are met with, for these may continue for very long periods of time. If, for instance, the high price of aluminum, assumed in the last paragraph, is the result not of temporary and fortuitous circumstances, but of a monopoly firmly intrenched in the trade, this high price may be maintained permanently, and will always appear as a cost to all enterprisers who employ aluminum as a raw material. The high price they must pay for aluminum they must recover from the proceeds of their own sales, and it will constitute an element in the price which the final consumer pays. Monopoly profits, therefore, must be recognized as an element of cost entering into normal prices, as they are found in the actual world today. Hence, the inclusion of "payments to monopolies for excess profits on goods under their control" as one of the fundamental elements of costs.

This raises an interesting question. If monopoly profits at early stages of production are to be classed as costs entering into the prices of commodities at later stages, is a monopoly profit exacted from the consumer at the final stage likewise to be classed as a cost? If so, it becomes an absurdity to refer to a monopoly as selling at a price which exceeds the costs of production. Logically, it is quite consistent with the concept of costs developed in this essay to regard monopoly profits at the final stage of production as a cost. If costs are payments which must be made to secure the use of scarce things,

it is perfectly reasonable to say that any payment made by the final consumer for goods is cost to him. Moreover, such costs arise out of scarcity and are fixed in a process of competitive bidding, on the opportunity principle, just the same as any others. But then, on this basis, the prices of all commodities always equal their costs of production, and costs and prices become, in fact, synonymous terms. Even a rare postage stamp, selling for $100,000, the original cost of making which was less than a cent, could by such an interpretation be said to be selling at its cost of production! In popular language this problem presents no difficulty, because the concept of costs is always an individual one. It refers to the payments which any individual must make in producing or acquiring a commodity. In the everyday sense of the word, an enterpriser's costs are the outlays he must make in carrying on his business, and he always sells at a price in excess of these costs if he can — which is usually the case. Similarly, a consumer can say: "This suit of clothes cost me fifty dollars, but it cost the retailer who sold it to me much less than that sum." There is nothing absurd, when such a concept is held, in saying that a producer sells in excess of costs, and yet regarding all that he gets for his product as a cost to the purchaser thereof. But the economist's concept of costs is not, and cannot be, an individual one, for he is endeavoring to explain the social phenomenon of value. In the social process of price determination he must class as a cost every element that enters into the fixing of prices. He may disregard, if he likes, short-period elements which will soon disappear in a competitive market, but he cannot disregard any element which enters as a determinant into the prices of commodities at any stage, from earliest producer to final consumer. Everything which makes for scarcity anywhere in the sequence of productive processes, including monopoly

at the final stage, gives rise to a price which the final consumer must pay, and may properly be regarded as a cost. For what it costs the community to secure a supply of any commodity, is all the payments which the final consumer must make to evoke its production. This conclusion is embarrassing, however, in that it does violence to the popular notion of costs, and appears to render ridiculous the very useful idea that a producer, particularly a monopoly, sometimes sells his goods at a price which exceeds the costs of production. An escape from this difficulty is possible by drawing a distinction between what may be called competitive and restrictive costs of production. Competitive costs are those which arise spontaneously out of the productive process, and would exist even if competition were perfect from one end of industry to the other. Every resistance to production inherent in the physical necessities of economic life would give rise to such a cost. Under competitive costs would be included, therefore, the first seven fundamental elements set forth on page 47. The eighth element (payments for monopoly profits) may be regarded as a restrictive cost. It would not appear in a competitive society. A monopolist may then be said to sell his products at a price in excess of their competitive costs. This terminology renders intelligible a popular idea, and is useful in passing judgment on matters of social policy in connection with monopolies. From the standpoint of the general welfare it is desirable that prices should conform as closely as possible to their competitive costs of production.

It has now been shown that all of the expenditures which enterprisers and consumers must make in the securing of a supply of a commodity can be attributed to certain resistances or scarcity-factors which set limits to production. The use of any of these factors for one product debars it from use for another, and so there

arises competition to secure it, which results in a price being set upon it, on the opportunity principle. There are eight of these factors, payments for which, therefore, constitute the fundamental elements of costs. A detailed study of various enterprisers' outlays indicates that in every case they can be broken down into one or more of these eight elements. A full recognition of the significance of this analysis will be of considerable significance for the theory of distribution. It has long been recognized that the distributive shares are identical with the costs of production, but the explanation of those shares has not usually been brought into very close harmony with the theory of costs. If the analysis of the present essay is correct, the fundamental elements of cost cut across the generally recognized shares of distribution in a manner which calls for some reconstruction of our ideas concerning the latter. Wages appear to be no longer an elemental distributive share, but to be composed of the more elemental factors of payment for effort, uncertainty-bearing, and perhaps other items. Interest breaks down into payments for waiting, uncertainty-bearing, and other elements of cost. Land rents resolve themselves into payments for land-space, natural materials, waiting, effort, uncertainty-bearing, etc. Finally, business profits can be broken up into the same eight elements of cost. There is some reason to believe, therefore, that the theory of distribution might be illuminated by attempting an explanation of how the income of society is apportioned into payments for these eight elements, before attempting a theory of wages, interest, rent, and profits. The present study cannot attempt to essay this interesting problem, but must leave it for future analysis.

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THE DOCTRINE OF COMPARATIVE COST

I. The value problem in international trade theory, 63.—II. Relation of real costs to value in general theory and in the theory of international trade, 65.—The importance of a unit of measurement of real costs. 66.—III. Position of the doctrine of comparative cost in international trade theory, 72. Treatment by Ricardo and Mill of the relation of real costs to value, 72.—IV. Cairnes and the doctrine of non-competing groups, 77.—Importance of this for the doctrine of comparative cost, 81.—V. Treatment by Bastable and Marshall of therelation of real costs to value in value theory and in the theory of comparative cost, 83.—VI. Summary and conclusion, 92.

I

THE last few years have seen a number of attacks upon a hitherto almost inviolate section of classical economic theory. I refer to the theory of international trade. No part of the work of Ricardo, Mill, and their followers has received less criticism and less alteration. As late as twenty years ago, so able a judge as Professor Edgeworth pronounced Mill's work in this field to be, of all sections of his treatment of economics, by far the most finished and the least susceptible to change. Whether the stability of the principles of international trade has been the result of their extraordinarily careful formulation, or of an extraordinary lack of interest in the subject by those economists most capable of treating it, does not have to be decided here.

It is the purpose of this paper to point out that this stability has left the treatment of value in the theory of international trade largely out of touch with the treatment of similar problems in the general theory of value. From Ricardo's day to this, the theory of value has met

with a succession of modifications important enough to give it at the present time an appearance considerably different from what it bore then. But the same writers who have modified the theory of value have refused to extend their modifications to the theory of comparative cost in their work on international trade. The result has been that in international trade pure value problems have been handled with a theory of value which has, in other circumstances, been given up.

A consideration of this apparent disagreement will provide the leading thread to which are attached the thoughts contained in the following pages. In the course of this consideration an attempt will be made to substantiate and defend the following opinions.

1. That most explanations of the principles of value and distribution have pretty well given up the attempt to relate value to units of real cost, such as units of labor-time or labor-effort.

2. That these units of real cost, however, persist in and are made the basis of most explanations of the principle of comparative cost and the theory of internanational trade.

3. That the history of international trade theory shows an extremely close adherence to this idea of a unit of cost, and that the explanations by certain writers of the principle of comparative cost runs in terms of such a unit even tho these same writers have given up the possibility of using this conception in their general theories of value.

4. That there is no particular reason why this conception should be found applicable to the theory of international trade tho rejected in general value theory.

5. That, in fact, its use leads to an obscuring and evasion of the problems involved in international trade.

II

The treatment of the relation of real costs to value in economic literature may be considered roughly to fall, with a number of intermediate gradations, between two points of view. Approaching the first are those economists who, thinking that the relation is one which can be stated in quantitative terms, have attempted to define and use a unit of real cost. Their explanation of value, then, usually runs in terms of this unit, and differences in normal value as between two commodities at a given time, or the same commodity under different conditions of production, are accounted for, or at least measured by, the difference in the number of units of cost required in their production. Approaching the second are those who consider real costs as a group of forces, for the most part quantitatively unmeasurable, influencing or determining conduct. The influences which bear on conduct and which intervene between potentially productive labor and the finished product, the result of this labor, are made up of a whole set of impedimenta, some of social origin, others connected with the nature and limitations of the individual. They are impedimenta to productive activity which must be overcome by compensating rewards of various kinds, generally speaking, money costs, before the productive activity is made available. Real costs conceived of in *this* fashion enter into the theories of value and distribution of *this* class of economists, but not in strictly quantitative terms. It is held that no unit of measurement is possible for influences of diverse origin acting upon individuals of different mental and physical make-up. Therefore, altho considerable and careful description may be given of the different forms which real costs may take, such as physical fatigue, monotony, social odium, or disesteem connected with various kinds of labor, and

altho attention may be paid to the way in which these costs affect the distribution of labor among various occupations, and the remuneration received in these occupations, very little attempt is made to reduce these costs to measurable form.

Without attempting to divide economists into these two classes, we might give as an example of the first, Ricardo, and of the second, Marshall; postponing to the following pages the necessity of justifying this selection. In general, the movement of economic theory during the last century has exhibited an increasing tendency to treat real costs as qualitatively important but quantitatively unmeasurable data. It is out of this movement that the so-called Price Economics, with its more positive but perhaps less searching treatment of the value question, has grown.

The difficulty of measuring real cost is in no way more clearly shown than in the dissatisfaction with which any proposed unit of measurement has been met. Let us take the common unit, hours of labor. Perfectly justifiable for certain uses, probably no living economist would maintain that for the general value problem all labor costs, let alone real costs of other kinds, such as time preference or risk, could be reduced to hours of labor of a standard grade. Data of this sort, made up as they are of states of consciousness, to use Professor Pigou's description, are too susceptible to individual differences even among laborers in the same grade and occupation. Further, the real cost involved in labor of different kinds or grades is subject to qualitative [1] differences incapable of being merged in any applicable

1. The distinction I should draw between quantitative and qualitative data for this purpose is this. If a common unit can be discovered into which, for the purpose in hand, the data can be resolved, the material is quantitative. If for this purpose no unit is available, the material is qualitative.

unit of measurement. We may be able to compare the importance of these qualitative differences to a given individual, granting him freedom of choice among occupations, by observing the amount of compensatory reward they lead him to demand, in terms of such a standard as money; but even in this case we can gauge the difference in cost only by its effects, and not directly. And in any case we can come to no conclusions of this sort which are generally applicable as between individuals.

The conception of the margin does not remove for us the difficulty of allowing for individual differences in tastes, temperament, and capabilities, nor does it in any way simplify the problem of developing a unit by which we can measure real costs. We know nothing of the relation between the costs of the marginal man and those within the margin. The marginal man in any grade of laborers is the man who will be dislodged by a slight change for the worse in the occupation, whether the change comes about as the result of a lowering of wages or of an increase in the disagreeableness of the employment. His real cost may be less than that of anyone else, in that particular grade or occupation, because of a lack of sensitivity to physical fatigue, or because of an interest that he takes in his work, or for a number of other reasons. If the opportunities for employment open to him elsewhere are such that any change for the worse in his present employ will dislodge him from that employ, he is a marginal man. His position at the point of greatest instability for that grade of labor in that particular occupation is the effect of his opportunity for choice between that employment and other employments; and this is the result of individual circumstances, of his physical and mental make-up, of his social connections, education, friends, and a hundred

other influences. The margin is a useful conception for focusing attention on the area in which the effects of small changes in the economic situation will operate, but it can give us no measurable data as regards cost, nor in any way simplify the problem of formulating a unit of measurement.

The difficulty of finding a unit of measurement of the productive factors is just as much present in the scarcity and productivity theories of value as it is in the cost theories. Unless scarcity is taken as a given fact, unless the attempt to explain the relative scarcity of articles or the factors of production or changes in this relative scarcity be given up, it becomes necessary to take account of the nature of certain influences on economic conduct. In order to know why labor of a certain grade is scarce, or why it is less scarce now than at some previous time, some attention must be given to the cost or disutility involved in labor of this kind. And if any quantitative explanation of the scarcity of this grade of labor as compared to other grades is to be given, some unit of measurement of real cost is necessary. The productivity explanations of value also meet difficulties at just the same point. What is the nature of the productive factors? If wages are to be explained by the productivity or the marginal productivity of labor it is necessary to define the unit which is productive. This method proceeds as it does from the value of the product to the unit of production; encounters the same difficulty as when the process is reversed and the approach is from the unit of production, or cost, to the value of the product.

It may be argued, however, that the difficulty, if not the impossibility, of defining a unit of measurement of real cost, of general applicability, is unimportant. The unit of cost or productive power may take a variety of

forms, depending upon the nature of the problem it is proposed to solve. For example, if some explanation of changes in value of a given product is sought, it may be afforded by a consideration of changes in the number of a unit of cost more or less arbitrarily chosen. The law of diminishing returns on land may be arrived at by a consideration of the change in the average physical product per laborer, equipped with an appropriate amount of capital, as additional laborers are set to work upon a given plot of land. Or, expressed in other terms, it can be obtained from an observation of the change in the number of units of real cost necessary to the production of a given unit of output as additional labor is applied.

It is true that for problems of this sort the question of the selection of a unit of measurement is relatively easy. What is required is the opportunity of observing the *change* in the relation between cost or productivity and value. And very many economic problems are of this sort.

It must be recognized, then, that an arbitrary unit of measurement of real cost or of productive power has a certain degree of validity, and possesses the defects of its virtues. It is a tool adapted for use under certain conditions, but its applicability is particular rather than general. The scope of this paper prohibits an adequate discussion of the limitations or possibilities involved in the use of a unit of this sort, but one or two of the possibilities may be mentioned. It has just been pointed out that the law of diminishing returns may be put in terms of standard units of labor and capital. Under a given set of conditions it will require more of these standard units to produce a certain quantity of product, as the application of labor and capital to a given plot of land is increased. Even tho it must be recognized that this

standard unit is not a unit of real cost in any adequate sense of the word, it is a unit of measurement adapted to the nature of the particular problem and useful for its purpose.[2]

The problem of decreasing cost may also, in part, at least, be approached in this manner. As the size of the unit of management is increased, supposing the decreased cost to be the result of internal economies, and if the relation of the productive factors to one another in this industry continues the same, then the change in normal value may be expressed in terms of the decrease in the number of a more or less arbitrarily chosen standard unit of cost, such as hours of labor of a certain grade required per unit of product. Changes in the value relation of various goods may be at least partially explained, then, by changes in their cost of production, even tho we have no unit of cost applicable to all or to any two of them.

It is not pretended that these examples exhaust the possibilities of the valid application of a unit of cost or of productive powers. In addition to explaining changes in the value of a particular commodity as between different points in time, when the relation of certain factors engaged in its production has not changed, it may be used in certain very exceptional circumstances to explain the value relations between commodities at a given time produced under similar conditions. But its possibilities are not large, and it is not adapted for use in explaining the value relations of goods produced under dissimilar conditions, which is the heart of the value

2. Altho one must recognize that no unit of real costs, correctly conceived of in terms of choice, can be formulated, it is justifiable for particular purposes, as I have attempted to point out, to construct a unit which can be used in quantitative measurement. Whether one should call this a unit of cost is another matter. In the following pages I have referred to it as a unit of cost or of productive power, since this is the familiar usage in economic literature.

problem. Cost of production theories break down in their attempted reduction of dissimilar factors to a given unit.

In view of this fact, it is somewhat surprising that an outworn method of approach is still adhered to and made the basis of the theory of international trade, even by those who have done most to break away from the rigid and unreal treatment of Ricardo. As in Ricardo's day, the principle of comparative cost, or comparative advantage, is still the starting-point for the theory of international trade. And with very slight modification it is still cast in the form given it by Ricardo. Goods produced within a given country are assumed to exchange for one another in proportion to their real cost of production. But it should be clear that this generalization assumes the possibility of constructing a unit of cost, into which can be resolved the cost or sacrifice of all human agencies engaged in production.

If the concept of real cost is used as anything more than an expository device, this would seem to be necessary in establishing even a rough quantitative relation between real costs and amounts of product. Even if we do no more than premise some degree of positive correlation between quantums of labor and quantums of product, the underlying assumption is made of the existence of homogeneous units of cost. The rehabilitation of a real cost theory of value is conceivable, and such a rehabilitation could repair the breach between the present orthodox theories of value and the presentation of the doctrine of comparative cost. But, short of this, those writers who have given up the possibility of a quantitative use of real costs in their general value theory must in consistency give up also the possibility in their formulation of the principle of comparative cost. This principle, in the manner in which it has been

used by English writers on international trade, is merely an application of value theory.

III

In the English, or classical, theory of international trade, the theory of Ricardo, Mill, Cairnes, Bastable, and Marshall, the doctrine of comparative cost occupies an important position. It lays the foundation for the special application of the theory of value made necessary by those conditions affecting the factors of production, peculiar to international trade, these conditions being the supposed greater mobility or competition of labor and capital within countries than between countries. International values are to be explained with reference, not to their cost of production, but to their cost of acquisition. It is with the factors influencing this cost of acquisition that their theory of international trade concerns itself.

The doctrine of comparative costs contributes to the solution of the problems of international values by proposing the answers to two main questions: (1) what commodities are exported and why? and (2) what are the limits within which the terms of exchange of exports for imports are determined? The familiar answer to the first question is, that a country will export those commodities, cost of carriage ignored, in which the real cost of production is relatively lowest. The items compared are relative costs of production of a series of commodities in one country with the actual, or possible, relative costs of production of the same series in another. The answer to the second is, briefly, that the relative costs governing, as they do, the rates of exchange between commodities, establish as limits in foreign trade the terms of exchange of the commodities concerned in each country. To put it in another way, a country tends to

export those commodities in which its absolute advantage in production is greatest or its absolute disadvantage least.

The immediate answer to both these questions, however, has, obviously, nothing to do with comparative costs of production except as they may be related to the relative values of the commodities. The commodities exported and the limits of their rates of exchange for imports are determined proximately by relative values and not by relative costs. And this use of relative values may prove to be a helpful tool, may serve as a starting-point in the theory of international trade, even tho no connection with relative real costs can be established.

This is substantially the position achieved if the doctrine is stated in terms of opportunity costs. If we consider that the cost of $15x$ is $10y$ in A and $20y$ in B, — that is, that the cost is made up of the values which alternative uses of the productive agents would create in each country, — we are in a position to state that x will be exported from A and y from B. We may also lay down the limits within which the exchange of x for y will take place. But, of course, this opportunity cost presentation does not answer the questions which Ricardo and Mill sought to answer with their formulations of the doctrine. The fact that $15x$ may be secured in A by giving up $10y$, while in B $20y$ must be relinquished, does not explain why these divergent ratios of exchange should exist in the two countries. It was to explain this fact that Ricardo, Mill, and their successors used their idea of cost-determined values. In their hypothetical examples, goods exchange for one another within a country in proportion to costs of production expressed in labor hours. The cost of capital, it is true, played a part in the value theories of both; but capital apparently was so evenly spread over the labor employed in

the manufacture of exportable goods, that this constant proportion could be neglected and the values of goods equated with each other through the measuring rod of labor time.

In Ricardo's treatment the relation of real costs to value is the same in his general theory of value as in his theory of international trade. He is consistent throughout. Just what this relation is, it is a little difficult to make out. There are two possible interpretations, each of which may be supported by his own words and by authority. For example, speaking of a hypothetical condition of trade between England and Portugal, he gives a characteristically ambiguous statement of the relation between labor costs and product.

> The quantity of wine which she [Portugal] shall give in exchange for the cloth of England is not determined by the respective quantities of labour devoted to the production of each *as it would be if both commodities were manufactured in England, or both in Portugal.*[3]

If the interpretation proceeds according to certain passages in the chapter on value, "quantities of labour" is an aggregate of homogeneous labor units secured by reducing different qualities of labor to a common unit through the equalizing agency of money wages. That is, an hour's labor of a ten-dollar-a-day laborer is called equal to two hours of a five-dollar-a-day laborer. This results in a statement of the doctrine of comparative cost which runs on all fours with the nature of opportunity costs. The value of a commodity is explained by other values which can be substituted or exchanged for it. If so, it is a theory of comparative values rather than of comparative real costs. And as such it helps no whit in solving the problems stated at the beginning of this section, the problems which Ricardo himself designed to solve.

3. Principles, p. 82 (Everyman ed.). The italics are mine.

The alternative interpretation considers "quantities of labour" to mean quantities of a given grade of labor, bearing so constant a relation to the other factors of production that the values of domestic commodities can be considered to be proportionate to the number of units of this grade involved. Marshall holds to this view in his appendix on Ricardo's theory of value, stating it to be Ricardo's opinion that

> the values of two commodities are to be regarded as in the long run proportionate to the amount of labour required for making them, only on the condition that other things are equal; i.e., that the labour employed in the two cases is equally skilled and therefore equally highly paid; that it is assisted by proportionate amounts of capital, account being taken of the period of its investment; and that the rates of profit are equal.[4]

The relative futility of a general value theory expressed in these terms is now pretty generally recognized, except, apparently, in the field of international trade. The almost infinite variety in the combinations of the productive factors which are met with in modern industry makes it quite impossible to account for the values of commodities by a comparison of the quantities of any one of the factors used in producing these commodities. This method of procedure is not suited to the nature of the problem.

But Ricardo's treatment has at least this merit. His method of explaining the value relation of domestic commodities in his general theory of value is consistent with the method he uses on the problem in his theory of comparative costs. In the work of later economists the divergence in the manner in which the relation of real costs to value is treated in their value theory and in their theory of comparative costs becomes increasingly marked. In Mill this divergence is already evident.

4. Marshall, Principles, p. 816 (7th ed.).

In the hands of Mill, the principle of comparative cost was given clearer exposition but was not otherwise altered.

> The values of commodities produced at the same place, or in places sufficiently adjacent for capital to move freely between them — let us say, for simplicity, of commodities produced in the same country — depend (temporary fluctuations apart) upon their cost of production.[5]

The values of imported articles depend upon the cost of production of the articles exchanged for them. And the rates of exchange of imports for exports are determined within the limits set by a comparison of the relative real costs of these articles in the countries exchanging them. In Mill's hypothetical examples, as in Ricardo's, these costs are expressed in quantities of labor. But in his previous treatment of value he expounds at some length why it is that, "the value of the product cannot be determined solely by the quantity of labour."[6] The chief reason for this is that the remuneration for labor must be considered as well as its quantity. Mill here runs into serious difficulties and appears at times to have adopted an entrepreneurial, money cost of production, theory of value. His difficulty, a difficulty which Ricardo mainly avoided by glossing it over, is the formulating of a unit of real cost into which the activities of different grades of labor can be reduced. He gets rid of it, or rather avoids it, by superimposing upon real costs, money costs. When differences in value cannot be completely explained by differences in hours of labor he comes to the conclusion that "the relative wages of the labour necessary for producing different commodities affect their value just as much as the relative quantities of labour."[7]

5. Mill, Political Economy, p. 583 (Ashley ed.)
6. Ibid., p. 459.
7. Ibid., p. 461.

These difficulties, however, do not appear in his theory of international trade; for the purpose of elaborating the principle of comparative cost, commodities within a country are supposed to exchange for one another in proportion to their "cost of production," and this cost of production may, for all practical purposes, be reduced to hours of labor.

IV

The problem, unsettled by Ricardo or Mill, of finding a standard unit of cost to which the sacrifices of different grades of labor could be reduced, presented itself clearly and forcibly to Cairnes. Entirely dissatisfied with the solution proposed by Mill, he insisted upon a more complete analysis of the relation between cost and value. It was in this analysis that he developed his doctrine of non-competing groups, a doctrine which since Cairnes's time has occupied an important tho a shadowy and ill-defined position in the work of English-speaking economists on the theory of value and of international trade. Altho the doctrine had been foreshadowed by Mill [8] and others, it had not been worked into and made a part of an exposition of the theory of value before Cairnes. Since then it has been in the minds of, if it has not been expounded by, all those who have thought about the relation of real costs to value. In Cairnes's hands it constitutes a recognized modification of and subtraction from the cost of production theory of value. The difficulty consists in discovering, not only in Cairnes's

8. For example, in this and other statements of Mill's (p. 460): "We have before remarked that the difficulty of passing from one class of employments to a class greatly superior, has hitherto caused the wages of all those classes of labourers who are separated from one another by a very marked barrier, to depend more than might be supposed upon the increase of the population of each class considered separately; and that the inequalities in the remuneration of labour are much greater than could exist if the competition of the labouring people generally could be brought practically to bear on each particular employment."

handling of the matter, but in that of others, just how much of a modification and subtraction has been made. And, what is more important, does this doctrine give us a useful method of approaching certain value problems? Is it anything more definite than an admission that, over a certain range of commodities, undefined and undefinable, no relation between real costs and value can be postulated? [9]

The combination of real costs and money costs which made up the value theory of Mill was severely criticized by Cairnes. Wages, he said, are the reward of labor, not its cost; profits are the reward, not the cost, of saving. What was needed was not an easy evasion of the difficulty of handling real costs, but a more complete examination into the nature of these costs. To this end he set himself. He attempted to reduce labor cost to three factors: "1st, the duration of the exertion, or quantity of labor; 2nd, its severity or irksomeness; and 3rd, the risk attending." [1] As far as laborers compete with one another (and he held the fields of competition to be large), wages are adjusted to compensate for the differences in the actual sacrifice involved.

Cairnes has no concept of marginal sacrifice or cost. It is, at the same time, obvious to him that the sacrifices of two laborers of the same group engaged in producing the same article and receiving the same wages may be quite different. The thin and anemic coal-heaver sacrifices more in effort and nervous strain than his hearty and robust fellow worker who receives the same wages. Therefore he falls back on the idea of average sacrifice.

> What we have to do with [he says] [2] is not individual sacrifice, but the average sacrifice of each industrial class. . . . This point being

9. Cf. H. J. Davenport, "Non-Competing Groups," in this Journal, Nov., 1925, p. 52.

1. Cairnes, Principles of Pol. Econ., p. 80.

2. Ibid., p. 87.

cleared up, we can have no difficulty in seeing how cost in its principal elements is to be computed. In the case of labor, the cost of producing a given commodity will be represented by the number of average laborers employed in its production — regard at the same time being had to the severity of the work and the degree of risk it involves — multiplied by the duration of their labors. In that of abstinence, the principle is analogous; the sacrifice will be measured by the quantity of wealth abstained from, taken in connection with the risk concerned, and multiplied by the duration of the abstinence.

It is evident that to Cairnes cost is something objective and ponderable. It can be measured and averaged. At the same time, it is a matter of muscle strain and nerve tension as well as of hours of labor. It is a little difficult to see how muscle strain and nervous excitation are to be weighed and measured and reduced to a standard unit of cost. Yet this unit must be constructed if differences in wages within the area of competition are to be accounted for independently, as Cairnes contends. To him, variation in terms of this unit of real cost, compounded of labor time, irksomeness, and risk, provided the sole and satisfactory explanation of why men in a given group remain in one occupation or move to another, choose this profession or reject that. Cairnes's principle of comparative cost becomes something as unworkable as this: a country will export those commodities in the production of which its relative average costs, in terms of labor time, irksomeness, and risk, are least.

But the theory of comparative cost was further complicated by Cairnes through the introduction of the idea of non-competing groups. If x exchanges for $2y$ in country A, it can no longer be assumed that the average real cost of producing x is twice the average real cost of producing y. For x may be produced by a group of laborers who do not come into competition with the laborers producing y.

The position of this theory of non-competing groups

in English value theory is, as has been said, ill-defined and somewhat ambiguous. It rests upon no statistical analysis, or very little, and, in the matter of grouping, almost anyone's guess is as good as that of anyone else. Cairnes classified laborers into four groups, dividing manual laborers into two groups, and mental laborers into two. According to Marshall, Giddings's division, into automatic manual labor, responsible manual labor, automatic brain workers and responsible brain workers, is, "perhaps as good as any division of industry into four grades can be";[3] and this is probably true. The point is that in the almost complete absence of statistical data, it is hardly worth while to attempt such a classification. For practical purposes the non-competing group idea is simply a recognition of the fact that labor is not quite free to move between occupations in a country, and that therefore the attempt to equate the values of goods on the basis of their relative labor costs is somewhat futile.

To be anything more than this, to be used as an actual tool in the analysis of a problem in domestic or international values, we must have more than a guess about the mobility or immobility of different groups of labor. Not only must we know something more definite than we do know about the nature and the limitations of the non-competing groups — we must know to what extent labor of the various groups enters into the various commodities we are interested in. No doubt, to call attention to the fact that there are certain persistent influences tending to make difficult the movement of laborers from occupation to occupation is necessary and important; but the attempted formulation of these difficulties into empirical generalizations applying over the whole field of industry has been of little use.

3. Marshall, Principles, p. 218, note.

Just how valueless it has been can be partly seen in the fact that Cairnes himself made no use of his own four non-competing groups when analyzing various problems in foreign trade. These groups, between which labor is relatively immobile, fade quietly into the background; Cairnes is oblivious of their existence when he handles various questions concerning foreign trade which arise out of the fact that such immobility does exist. The immobility exists, rightly enough, but it does not seem in any way to fit into or concern itself with the non-competing groups.

Cairnes's most striking example is the cultivation of sugar in Queensland by Polynesian labor. The blacks are an isolated group in the labor population, comparatively unaffected by the difference between wages for this sort of labor and the wages of unskilled white labor.

> The Polynesian [says Cairnes] can expose himself without detriment to a tropical climate . . . and, his expectation of reward not being pitched high, he is easily induced, for a rate of pay considerably under that prevailing in the colony, to hire himself for the work. On the other hand, the Polynesian is unfitted, from his habits, and to some extent from his inferior physique, for taking part, except in a quite subordinate way, in the ordinary mining, pastoral and agricultural occupations. It results from all this that the possibility of cultivating sugar in Queensland with the ordinary profits of the place depends almost entirely on the presence there of these Polynesian laborers; and sugar being mainly used as an article of export, it comes to pass that the course of foreign trade in this article turns almost entirely upon a question of wages.[4]

In applying this doctrine to England, he is forced by circumstances to adopt a hypothetical illustration — a procedure justifiable enough if his illustration did not entirely violate his own explanation of the nature of non-competing groups. He imagines a fall of wages in the Sheffield trades, the labor of which is, for his purposes, isolated from competition with other labor in

4. Cairnes, Political Economy, p. 329.

England. In his theory, non-competing groups are the result of horizontal social stratification; the lines are cut across the income groups and separate laborers into grades. It may be objected that the reasoning is the same, and that for this purpose any example will serve. This is quite true, but it goes to show that, as a working tool, the idea of non-competing groups is useless. It cannot be expressed in experiential generalizations supposed to represent the facts of social stratification.

If the lines of demarcation separating the non-competing groups from one another are horizontally drawn, the chances are that they cut across occupational groups. It is probable, then, that almost all commodities are produced by a combination of laborers which includes members from all the groups, tho in varying proportions. The proportion of unskilled to total labor in steel-making may be greater than in watch-making, but in both these occupations labor of all grades, from the responsible brain-workers to the irresponsible hand-workers, is employed. If Cairnes's description of the nature of the stratification of productive laborers is true, then it is a rather wide, sweeping admission of the fact that a constant relation between real costs and value cannot be drawn. But he refuses to make this admission explicitly. He apparently goes so far as to maintain that his groups are not only non-competing, but non-coöperating. He imagines that commodities are produced in a country by separate groups unassisted by labor from other groups. Each group, acting in the same way as a country, exchanges its products for the products of other groups, and the rates of exchange are governed by the forces of reciprocal demand in exactly the same way as in the exchange of commodities between countries. One would think that, if this description really represented the facts, if commodities were really

produced by the various social groups without assistance from one another, Cairnes could have found his illustration without going to the trouble of imagining the operation in isolation of the Sheffield cutlery trades. But, as a matter of fact, since the various groups do contribute their services in varying proportions to the production of different commodities, it becomes impossible to make any practical use of Cairnes's description of non-competing groups. The value, then, of this doctrine comes down, I think, to this: it is a praiseworthy recognition of the fact that the operation of a certain set of social influences tends to break down whatever constant relation would otherwise exist between real costs and value.

V

The writings of Bastable and Marshall, two of the modern exponents of the classical doctrine, show a somewhat modified handling of the principle of comparative cost. In those of Bastable the form in which the principle is cast is somewhat altered. Marshall, on the other hand, preserves the old form, and his hypothetical examples run in terms of days of labor; but he is inclined to attribute less importance to the principle and concedes to it a small amount of attention. To Bastable, comparative cost is still "undoubtedly the main regulative condition of international exchange." [5] "And," he goes on, "it may be said that the comparison is not one of prices, but of sacrifices." The sacrifice is conceived of as that undergone by "units of productive power." We are given little information as to the structure of these units, nor is any attempt made to analyze the nature of the sacrifice undergone by a unit of productive power. It is rather easily assumed that the real cost involved is the same for all units during a given period of time.

5. Bastable, Theory of International Trade, p. 15.

The unit is treated with reference to its productivity as well as to its cost. Thus his statement of the principle runs in terms of comparative advantage as well as of comparative cost. The comparison, in this case, becomes one of relative productivity instead of relative costs. Of course, if it be granted that the real cost per unit of productive power is, or even strongly tends to be, the same, no alteration has been made in the theory of Ricardo, Mill, and Cairnes. And this is the meaning which Bastable intends to convey. But he treads clumsily on this difficult ground of the relation between value and costs. Having once made the statement that the comparison is one of sacrifice, he tarries no longer.

The question that has been touched earlier arises here again. Is there any essential difference between comparative advantage and comparative cost, or are they simply different ways of looking at identical phenomena? The question resolves itself into the nature of the unit of measurement in which the comparison is made. If the comparison is in terms of the relative efficiencies of a given unit of productive agents, and if upon inspection this unit turns out to be compounded of the real costs of these factors, there is obviously no difference between comparative cost and comparative advantage. Bastable's units are so compounded, and consequently his principle of the relative efficiency of productive powers represents simply a verbal change from the principle of Ricardo and Mill.

In illustration of this principle of comparative advantage he turns to the instance of Jersey, which, he says, "could produce wheat more efficiently than England, but she finds it more advantageous to grow fruit and early potatoes, importing the corn that is required." [6] Now the efficiency of the productive unit

6. Bastable, p. 16, note 2.

depends very largely, if not primarily, on the organization of the productive factors and their relation to one another. It is difficult to conceive of productive units, composed of constant proportions of land, labor, capital, and organizing ability, being applied to the production of, let us say, stoves, chairs, and oats, or even to the production of fruit, early potatoes, and wheat. The combination of factors most effective in the making of one product may not, and probably will not, be the most effective one for the turning out of another. So, unless we can think of land, labor, business ability, and capital as mutually resolvable into one another, it becomes impossible to compare the relative productivity of standard productive units.

But Bastable did not push the idea of an invariable combination of productive factors far, if indeed he held it at all; he retained, tho without explanation, the old formulation of comparative sacrifice. His treatment of the modification of the principle introduced by Cairnes's doctrine of non-competing groups is most unsatisfactory. He emphasizes the fact that the value theory he is about to develop applies to those groups between which commodities are exchanged but between which "industrial agents do not pass." [7] He admits that several such groups are to be found in domestic trade. But, he says,

> it is further to be remembered that, even if there is no free competition between all the industrial groups within a country, still this of itself furnishes no sufficient reason for abandoning the special form of theory hitherto adopted for our subject. Two other courses are open to us, viz., either (1) to freely extend the theory to all non-competing groups, thus adding to the number of objects to be dealt with; or (2) to treat each nation as a compound group, including several minor bodies, to which in turn the theory may be applied, while the exposition of the general doctrine is modified by the presence of these groups, so far as in fact they alter the operating forces.[8]

7. Bastable, p. 13.

8. Ibid., p. 8.

All of which is very sound and profoundly true. But he makes no attempt to discover or to explain how far in fact these operating forces are altered in domestic trade. And, so far as his subsequent argument is concerned, the alteration is treated as so slight as to be practically non-existent.

In Professor Marshall's *Money, Credit and Commerce*, which appeared in 1923, is contained his statement of the principle of comparative cost. In no important respect does it differ from the statement of it made by Ricardo over a hundred years ago. The comparison is between relative real costs and sacrifices. Marshall's examples, as were Ricardo's, are cast in the form of hours or days of labor. The only addition is the putting in explicit form of assumptions and qualifications which in Ricardo's work were implicit. Such steadfastness in any principle is remarkable, and the more so in this instance since the principle of comparative cost is based upon a theory of value which has been profoundly modified in the last century. In that time considerable light has been thrown upon the relation between real costs and value, and by no one more than by Professor Marshall. It seems strange, upon the appearance of his last book, to find him clinging to a branch of the tree which he had himself already cut off some years before.

As I have attempted to point out, the problem involved in the principle of comparative cost is the same general problem that faces any economist in the development of his theory of value. How explain the value relation between commodities which satisfy different sorts of demands and which are made under conditions of production that materially differ? Why does x normally exchange for $2y$, x being produced by a certain set of productive factors and y by another? The problem is not so much the explanation of changes in

the value of x or y, but the explanation of why x is worth $2y$. In the general theory of value laid down by Marshall in his *Principles*, complicated and intricate as it is, certain opinions with reference to the relation between real costs and value stand out fairly clearly. In the first place, it is recognized that no unit of real cost applicable to all factors of production, or even to the numerous grades of one factor, such as labor, can be postulated, and that consequently no quantitative relation between real costs and value, generally applicable to all commodities, can be established. Secondly, and at the same time, it appears clearly enough also that, for certain purposes, it is not only extremely desirable but quite possible to use real costs quantitatively, in the explanation of value phenomena. But it does not follow that the unit of measurement used for particular purposes is valid for general application. In his discussion of value, Marshall follows admirably the advice he dispenses in another place: "the function . . . of analysis and deduction in economics is not to forge a few long chains of reasoning, but to forge rightly many short chains and single connecting links." [9]

Professor Marshall's treatment of domestic values for the purpose of his international trade theory offers an interesting contrast to his handling of domestic values in his *Principles* and elsewhere. When considering international trade, he drops altogether the careful formulation and classification of diverse influences bearing upon the relation of real costs to value, and proceeds on a crude cost of production basis. An adequate account of the difference in the two treatments would involve a minute analysis of his whole value theory, an undertaking unnecessary for the purpose of this paper. It will suffice to call attention to representative passages.

9. Principles, p. 773.

Typical of his treatment of the relation between real costs and value or price in his general value theory is the following paragraph from the *Principles*.

> Thus then the attractiveness of a trade depends on many other causes besides the difficulty and strain of the work to be done in it on the one hand, and the money earnings to be got in it on the other. And when the earnings in any occupation are regarded as acting on the supply of labour in it, or when they are spoken of as being its supply price, we must always understand that the term earnings is only used as a short expression for its "net advantages." We must take account of the facts that one trade is healthier or cleanlier than another, that it is carried on in a more wholesome or pleasant locality, or that it involves a better social position; as is instanced by Adam Smith's well-known remark that the aversion which many people have for the work of a butcher and to some extent for the butcher himself, raises earnings in the butcher's trade above those in other trades of equal difficulty.[1]

The meaning of this is simply that the real cost of any occupation to the normal laborer in it is the disutility, or the sum total of resistances, social and psychological as well as physical, which it offers to activity in that direction. Real cost is not measurable in hours of labor or foot pounds of work, nor can it be expressed in terms of units of any sort. The real cost to the normal laborer of any grade, involved in the production of a given quantity of goods, is as difficult to conceive of as the utility of a commodity to the "normal" purchaser of any income group.

In the book on Demand, Marshall takes the position that utility must be conceived of as synonymous with desire or want; it is the incitement to activity. He uses utility in the tautological sense of an expression of choice. And utility, he holds, is measurable not in itself but only through its effects. "In those cases with which economics is chiefly concerned, the measure is found in the price which a person is willing to pay for the fulfillment or satisfaction of his desire." [2]

1. Principles, p. 556.

2. Ibid., p. 92.

It should be evident from the paragraph previously quoted that in the last analysis he conceives real cost in the same fashion. We know cost only from the price which the laborer or other producer insists upon receiving. Paraphrasing Marshall's statement on utility, we might say that in those cases with which economics is chiefly concerned, the measure is found in the price that a person insists upon receiving in return for his services rendered in the fulfillment of satisfaction of other people's desires.

But what about the differences in grades of labor and the effect of these differences on the relation between wages and real costs? In Marshall's words:

> Each of the hundred or more groups of workers has its own wage problems, its own set of special causes, natural and artificial, controlling the supply price, and limiting the number of its members; each has its own demand price governed by the need that other agents of production have of its services.[3]

To throw light on the complexity of the relations between these groups and the variety and multiplicity of the influences governing and limiting the movements of laborers from group to group is one of the chief tasks he sets for himself in his chapters on wages. He rejects the term non-competing groups, but points to the conditions which maintain and perpetuate a class of laborers, "unfit for any but the lowest grade of work," [4] and emphasizes the cumulative effect which certain conditions connected with the stratification of society have upon the continuation and fixation of this stratification. The result of all, we must infer, is a situation in which the returns to laborers in different groups are not commensurate with real costs, in whatever manner real costs are understood. Enough has been said to make clear what, perhaps, has never been in dispute,

3. Principles, p. 533.

4. Ibid., p. 558.

that in Marshall's theory values do not correspond to real costs measurable in anything but value or price terms.

Turning now to Marshall's work on international trade, we find little interest in the problems connected with the theory of comparative cost which had filled so important a place in the discussions of his predecessors. The consideration of the theory itself is relegated to an appendix, where it appears in the form of a hypothetical example.

"Let the labour of ten men in E," he says, "produce as much as that of

16	in	G	in	regard	to	P
12	"	"	"	"	"	Q
11	"	"	"	"	"	R
10	"	"	"	"	"	S
9	"	"	"	"	"	T
8	"	"	"	"	"	U
6	"	"	"	"	"	V" [5]

All other influences affecting values, with the exception of hours of labor, are assumed to be non-existent. In his own words,

> the real costs of production of each commodity in each island [islands are assumed as countries] is taken to be constant; though differences of soil, climate, agricultural and mineral resources cause many differences in the relative costs of various commodities in the two islands. Differences in the skill required for different occupations, and in the amount of capital by which each man's labour needs to be assisted are neglected (or else the values of the several classes of labour and stocks of capital are expressed in terms of the value of labour of a standard efficiency), so that the real cost of production of any commodity in either island can be regarded as proportional to the amount of the standard labour of that island.

The question that immediately comes to one's mind is, why, if it is justifiable to abstract from all the components of real costs except hours of labor of a standard

5. Money, Credit and Commerce, p. 323.

grade of laborers, for purposes of a theory of comparative cost, is it not also justifiable to apply the same method to the general theory of value? Why all this talk of differences in efficiency, in the social prestige with which various tasks are regarded, of irksomeness and monotony, of skill, and of groups of labor between which competition is inoperative? Why unnecessarily complicate one's value theory when all the essential elements of real cost can be reduced to the easily measurable terms of hours of labor? The problem for which the principle of comparative cost is a proposed solution is no different from the general problem of value which Marshall faces in his *Principles*. If hours of labor can be taken as an adequate measure of real cost in the solution of the first problem, they can with equal adequacy be taken for the second. But if, on the other hand, it is generally admitted that for purposes of a theory of value, real costs cannot be reduced to any such terms, this admission should extend as far as those principles of international trade which are but a special application of this theory.

A comparison of the hours of labor of a standard grade necessary to the production of a series of commodities does not give us the value relations of these commodities. As a matter of fact under actual conditions, the commodities in Marshall's example, P, Q, R, S, T, U, and V, would exchange against one another in proportions quite different from those suggested by a comparison of the hours of labor. Commodities would, no doubt, be found to be normally imported, which, under a cost analysis of this sort, might be expected to be exported. And those goods which, upon a cost comparison, should with every reason be imported, might be found to be exported.

VI

In the preceding pages I have tried to show that any attempt to explain or measure the value of different commodities in terms of real cost is impossible without a unit of cost into which the various productive factors and the various grades of these factors can be reduced; and that the history of English value theory from Ricardo to Marshall has shown a cumulative recognition of the fact that no such unit of general applicability can be formulated. Ricardo possesses the merit of having applied his value theory consistently, tho this theory was stated in such rigorous terms as to have been unacceptable to his successors. Mill met the difficulty of finding such a unit by abandoning the cost of production theory, or rather by supplementing it incongruously with a money-expenses explanation. Cairnes attempted to meet the same difficulty by introducing his doctrine of non-competing groups, which is hardly more than an admission of the fact that a certain set of imponderable and unmeasurable social influences prevents costs from bearing any constant relation to values. And, finally, Marshall, in an elaborate and intricate treatment of the whole problem, while finding certain particular uses for a unit of real cost, substantially insists that no unit of general applicability exists.

In the second place, I have tried to show that the doctrine of comparative costs or advantage rests upon the assumption that such a unit of cost, applicable to all commodities, can be constructed. The history of the classical theory of international trade from Ricardo to Marshall shows no deviation from this assumption. The formulation of the principle by Marshall differs in no essential respect from that offered by Ricardo.

And lastly, the problem involved in the doctrine of

comparative cost is precisely the same as that involved in the general theory of value. In view of this fact two possible methods of approach suggest themselves. Consistency could be attained by a rehabilitation of a cost theory and its application to those general problems which lie outside the field of international trade. Or, on the other hand, the present use of real costs in the theory of international trade could be given up, and the problems of international values treated in the same way that similar problems are treated in the general theory of value.

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THEORIES OF BUSINESS FLUCTUATIONS

I. A CLASSIFICATION OF THE THEORIES

SUMMARY

Definition of the phrases "business fluctuations," 94; "business cycle," 95; "periodic cycle," 95. — Concept of normal, 96. — Old and new meanings attached to "commercial crisis," 98. — Classification of the theories according to emphasis placed on causes, 99. — Extracts from writers emphasizing factors other than economic institutions, 104. — Extracts from writers emphasizing economic institutions, 109.

THIS series of papers undertakes to examine critically the theories of business fluctuations. I begin, in the present instalment, with a classification of the theories, and with a characterization, chiefly in the language of the several authors, of their essentials.

The phrase "business fluctuations" has been chosen on account of its inclusive character. I am using it to cover, not the variations from month to month, but the wider swings of business from depression to prosperity or from prosperity to depression, the alternation of good and bad trade, the ebb and flow of industrial activity, the cyclical movement from prosperity, through recession, depression and revival to prosperity again. "Business fluctuations," in the sense here used, carries with it no connotation of definite periodicity or amplitude of swings, altho it includes strictly periodic oscillations, as well as movements which are irregular both in duration and in magnitude.

It will aid to an understanding of the sense in which

I use the phrase "business fluctuations" to state precisely what it does not include as well as what it does. The phrase does not refer, first, to the variations that occur with the round of the seasons each year; nor, second, those minor disturbances which do not result in general business prosperity or depressions; nor, third, a secular trend covering one or more complete cycles of prosperity and depression. The following scheme indicates what fluctuations are included under the term.

Business fluctuations cover:

A. Irregular movements (non-recurrent)
   1. Plus and minus deviations from some chosen basis of measurement which do not reveal definite characteristic phases and do not recur.
   2. A series of plus and minus deviations which pass through definite phases but do not recur.

B. Business cycles (recurrent)
   1. Non-periodic cycles of which the wave lengths and amplitudes are variable.
   2. Periodic cycles of which the wave lengths are approximately uniform.

The terms "cycle" and "periodic cycle" are used in the scheme just presented with the meaning which Dr. F. E. Clements so well defined at the Conference on Cycles called in 1922 by the Carnegie Institution. Dr. Clements said, with reference to the word "cycle," "In general scientific use the word denotes a recurrence of different phases, of plus and minus departures, which are often susceptible of exact measurement. . . . It seems desirable to use cycle as the inclusive term for all recurrences that lend themselves to measurement, and period or periodicity for those with a definite time inter-

val, recognizing, however, that there is no fixed line between the two." [1]

It will be noticed that Dr. Clements defines cycles as fluctuations which are measurable and recurrent. The idea that cycles are measurable requires further consideration.

The measurement of cycles or of any fluctuation assumes, first, a variable to be measured, and second, a scale and zero point. In business fluctuations the variable to be measured is "general business." After choosing the statistical series which reflect general business we must, if we are to measure general business, choose something — an average, or the ordinates of secular trend, or "normal" — as the datum line to which our measurements refer. The selection of a datum line from which to make our measurements, even tho we call that datum line "normal," does not, of course, mean that business is presumed to remain constant in the absence of a specific "disturbing cause." Business is a variable, it is in a continual state of flux — altho the forces which result in wide deviations may be self-corrective — and in order to discuss variations, such as those from prosperity to depression, we require a scale and a datum line. The concept of "normal" is not opposed to "variable"; "normal" is the datum line from which we measure the "plus and minus departures" of a variable.[2]

The datum line or "normal" which appears to be

1. "Nature of the Problem of the Cycle," by F. E. Clements, The Geographical Review, vol. xiii, Special Supplement, October, 1923, pp. 657–658.

2. Wesley C. Mitchell in his Introduction to Business Annals apparently holds that the concept of normal *is opposed* to variable for he says (p. 32), "If 'normal' is interpreted to mean usual, prevailing, that which exists in the absence of grave 'disturbing causes,' the annals show that the only normal condition is a state of change — which is not what the phrase means to those who use it."

most useful in measuring business fluctuations over a long period of years is a line or curve of secular trend from which the individual phenomena deviate on either side. In many cases this concept of normal corresponds exactly with the statisticians' definition of "usual," "prevailing," or "mode." For example, let us consider the figures for aggregate bank clearings for seven representative cities (excluding New York City) of the United States by months for the period 1875–1914. A frequency table constructed from the figures, adjusted for seasonal variation and expressed as relatives of secular trend, gives the following result.

FREQUENCY TABLE OF ADJUSTED RELATIVES OF AGGREGATE BANK CLEARINGS FOR SEVEN SELECTED CITIES: MONTHLY, 1875–1914 [3]

(Relatives to ordinates of trend, adjusted for seasonal variation)

Class Intervals	Frequency	Class Intervals	Frequency
69–71	2	99–101	57
72–74	3	102–104	53
75–77	8	105–107	45
78–80	15	108–110	36
81–83	13	111–113	36
84–86	28	114–116	18
87–89	37	117–119	10
90–92	29	120–122	11
93–95	38	123–125	3
96–98	35	126–128	3

Median = 100, Mode = 99–101, Arithmetic average = 99.33.

In the table just given the mode, the median, and the arithmetic mean of the series of variable bank clearings (measured from the ordinates of secular trend as "normal") occur within the same class interval, 99–101. In this case bank clearings can be said to be more frequently at 99–101 than at any other three point interval and, therefore, are "normal" in the strict statistical sense.

3. Data from Review of Economic Statistics, October, 1925, p. 261.

In view of the voluminous literature which has grown up about the concept "commercial crisis," it may seem strange that the term has not been mentioned in the definition of business fluctuations given above. The purpose of the omission was to avoid the confusion of a term so variously used as "crisis." Many of the earlier economists thought of the problem of business prosperity and depression exclusively as one of explaining those spectacular cataclysms which three or four times in a generation played havoc with the business world. On the other hand, the later economists, in general, think of the problem primarily as one of explaining the cyclical character of business fluctuations.[4] Consequently, in the various theories of business fluctuations the concept of commercial crisis (as well as that of financial panic) has come to play a less dominant rôle.

4. See, for instance, Wesley C. Mitchell's Introduction to Willard L. Thorp's Business Annals (Publication No. 8 of the National Bureau of Economic Research, Inc., New York, 1926); R. G. Hawtrey's Good and Bad Trade (London, 1913), p. 175; Albert Aftalion's "Le Rhythme de la Vie économique," Revue de Métaphysique et de Morale (1921), p. 278, and Joseph Schumpeter's "Die Wellenbewegung des Wirtschaftslebens," Archiv für Sozialwissenschaft und Sozialpolitik (August, 1914), pp. 1–32. The notion that trade fluctuates in cycles is, however, not of recent origin. Thus, in 1837, Lord Overstone described changing business conditions as follows: "The history of what we are in the habit of calling the 'state of trade' is an instructive lesson. We find it subject to various conditions which are periodically returning; it revolves apparently in an established cycle. First we find it in a state of quiescence, — next improvement, — growing confidence, — prosperity, — excitement, — overtrading, — convulsion, — pressure, — stagnation, — distress, — ending again in quiescence." (Reflections suggested by a Perusal of Mr. J. Horsley Palmer's Pamphlet on the Causes and Consequences of the Pressure on the Money Market, London, 1837, p. 44.)

Dr. Arthur Spiethoff, in his article on "Krisen" in the Handwörterbuch der Staatswissenschaften (1923, 29 und 30 Lieferung. Bog. 1–10 des VI Bandes), refers to Clement Juglar as the originator of "the new study of crises as phenomena of economic organization." Juglar's forerunner, says Spiethoff, was not Sismondi, Malthus, J. B. Say, or Marx, but Thomas Tooke (1774–1858). In support of this view, Spiethoff says that Tooke (1) used expressions for commercial expansion, crisis, and depression, (2) placed these phenomena in the nineteenth century, describing their features, and (3) pointed out their cyclical character.

The word "crisis," however, is still in constant use and certain writers attach to it a new meaning. Thus, Professor Jean Lescure defines a commercial crisis to be (translating) "exactly the point of intersection of a period of prosperity lasting from three to five years, with a period of depression of similar duration." [5] The adoption of such a definition, altho having certain advantages, is the use of an old term in a new sense, and this I wish to avoid in the present study. Consequently, the phrase "business fluctuations" will be used to include both those changes from prosperity to depression signalized by a spectacular crisis and those gradual changes in which prosperity fades insensibly into depression.

Helpful classifications of theories of business fluctuations might be made on the basis of various criteria; such as the nature of the fluctuation, periodic or nonperiodic, the origin (that is, the beginning) of the fluctuation, the cause assigned to the lapse from prosperity to depression, the remedies offered, or the element in the author's explanation which he emphasizes most in his discussion of the causes. It has been found by the present writer, after various criteria were tried, that the most workable one was the last one mentioned; and hence the classification has been made according to the elements in each explanation most emphasized by the author himself. These elements may be specific events from which arise a train of sequences, or economic institutions which condition a train of sequences, or inherent human qualities which are held to be real origins, or the inevitable development of society which, given our economic institutions, causes fluctuations; but in

5. Des Crises générales et périodiques de Surproduction, p. 2 (3d edition, Paris, 1923). I have used "crisis" in Lescure's sense (see Review of Economic Statistics, February, 1920, p. 47).

any case the "elements emphasized" was the basis used for the present classification.

The procedure adopted was to read the various important books and articles on the subject with this criterion in mind, make numerous extracts, and then select the most pertinent portions of these extracts for quotation. The resulting classification in skeleton form is given on p. 102, and the same classification, with supporting quotations, follows it.

The difficulties of classifying writers, even according to what appears to be the most workable criterion, were not inconsiderable. Thus, to illustrate, passages from two writers, William Smart and Alfred Marshall (whose names, however, do not appear in the classification) may be cited. William Smart in his *Economic Annals of the 19th Century* [6] gives as his reasons for the cyclical movement of industry (1) "excessive division of labor," (2) "every industry depends for its smooth working on other industries," and (3) "every industry depends on purchasing power obtained from other industries." "The third, and to some extent the second, of these explains the phenomena of industrial contagion, and contagion explains the cyclical movement." But as to the *origin* of business prosperity he is uncertain, for he says: "Depression breeds depression. . . . The only thing that remains obscure is how the reaction from depression begins." Taking the quotations together we might describe Smart's view as follows: Given business prosperity, the cause of its lapse into depression is to be found in the curtailment and loss of purchasing power of some trade, either because of dislocation of supply or change of demand, which in turn affect other trades. Revival from depression depends upon the creation in some way of new purchasing power.

6. Volume for 1801–20 (London, 1910), pp. 607, 608.

As a second illustration of the difficulty of classification, I refer to Alfred Marshall's utterances in his *Money, Credit and Commerce* (1923).

> An improvement of credit may have its rise in the opening out of foreign markets after a war, in a good harvest, or in some other definite change: but more often it arises from the mere passing away of old causes of distrust, which had had their origin in some previous misfortune or mismanagement. Whatever its origin, when once begun it tends to grow. . . .
>
> The immediate *occasion* of a commercial crisis has often been a few business failures, that would have been unimportant if the solid framework of business had not been overlaid by much rather loose credit: but the real *cause* of the crisis was not to be found in those small failures. It lay in the slender hold which much credit at the time had on solid foundations.[7]

From these passages one concludes that in Marshall's view the *cause* of a crisis is the overexpansion of credit, and the *origin* of an improvement of credit is some specific occurrence.

Such cases as these two illustrate the difficulty of judging exactly where an author has placed greatest emphasis, and, therefore, what is his position in the classification. In spite of this difficulty, I believe that the classification now given is substantially accurate.

I give now a summary classification of current theories of business fluctuations. The theories are classified in two main groups according to the element which the authors emphasize most in their discussion of the causes of business fluctuations. First, the authors may place emphasis upon some event or factor other than our economic institutions of capitalistic roundabout production, division of labor, private ownership, competition, distribution of wealth and income, and money and credit, as the origin of business fluctuations. Second, they may place emphasis upon economic in-

7. Money, Credit and Commerce, pp. 249, 251.

stitutions as the factors conditioning the course of business fluctuations; specific disturbances coming in the natural course of events and, because of the nature of our economic institutions, setting up oscillations.

In the lists which follow, the letters A, B, C . . . are used to distinguish the several classes of theories. The numbers 1, 2, 3 . . . mention the writers. In arranging the writers who belong in the subdivisions, those only to whom chief attention will be given in each subdivision are numbered, others being mentioned in parenthesis.

I. Emphasis on Factors other than Economic Institutions

A. Periodic agricultural cycles generate periodic economic cycles.

1. W. S. Jevons and H. S. Jevons. 2. H. L. Moore.

B. Uneven expansion in the output of organic and inorganic materials is the cause of the modern crisis.

3. Werner Sombart.

C. A specific disturbance, such as an unusual harvest, the discovery of new mineral deposits, the outbreak of war, invention, or other "accident," may disturb economic equilibrium and set in motion a sequence which, however, will not repeat itself unless another specific disturbance occurs.

4. Thorstein Veblen. 5. Irving Fisher. (A. B. Adams.)

D. Variations in the mind of the business community (affected, of course, by specific economic disturbances) are the dominating cause of trade cycles.

6. A. C. Pigou. (Ellsworth Huntington, M. B. Hexter.)

II. Emphasis on Economic Institutions

E. Given our economic institutions (particularly capitalistic production and private property) it is their tendency to development which results in business fluctuations.

7. Joseph Schumpeter. 8. Gustav Cassel. 9. E. H Vogel. (R. E. May, C. F. Bickerdike.)

F. The capitalistic or roundabout system of production is the primary cause of business fluctuations.

10. Arthur Spiethoff. 11. D. H. Robertson. 12. Albert Aftalion. (T. E. Burton, G. H. Hull, L. H. Frank, T. W. Mitchell, J. M. Clark.)

G. Excessive accumulation of capital equipment, accompanied by mal-distribution of income, is responsible for lapses from prosperity to depression.

13. Mentor Bouniatian. 14. Tugan-Baranowsky. 15. John A. Hobson. (M. T. England, W. H. Beveridge, N. Johannsen, E. J. Rich.)

H. The fluctuation of money profits is the center from which business cycles originate (eclectic theories).

16. W. C. Mitchell. 17. Jean Lescure. (T. N. Carver.)

J. The nature of the flow of money and credit, under our present monetary system, is the element responsible for the interruption of business prosperity.

18. R. G. Hawtrey. 19. Major C. H. Douglas. 20. W. T. Foster and Waddill Catchings. (A. H. Hansen, W. C. Schluter, H. B. Hastings, H. Abbati, W. H. Wakinshaw, P. W. Martin, Bilgram and Levy.)

I proceed now to justify this classification. The extracts which follow are selected with a view to bringing out the essential points of the several theories. Tho quotation marks are not used, the reader will under-

stand that, unless otherwise indicated, the words are quoted without change from the writings of the author. Where italics appear, they are also the author's.

I. Emphasis upon Factors other than Economic Institutions

A. Periodic agricultural cycles generate periodic economic cycles.

1. *W. S. Jevons.* [After estimating the average interval between crises at 10.44 years and quoting estimates of the sun-spot interval, 10.45 years, made by Mr. J. A. Broun and Dr. Lamont, W. Stanley Jevons proceeds:] Judging this close coincidence of results according to the theory of probabilities, it becomes highly probable that two periodic phenomena, varying so nearly in the same mean period, are connected as cause and effect.[8]

(*H. S. Jevons*, developing the sun-spot theory of W. S. Jevons). [The heat emitted by the sun varies in cycles of 3½ years, every third fluctuation being emphasized. These cycles generate crop cycles.]... The impulse from the harvests comes every 3½ years, so that trade fluctuations must fit into the nearest multiples of 3½ years. . . . It requires further research to decide fully the respective shares of the economic and meteorological causes in determining whether the trade cycle shall last for seven or for ten years.[9]

2. *H. L. Moore.* [Periodic cycles in crops generate

8. Investigations in Currency and Finance (London, ed. 1884), p. 215. Sir William Herschel was probably the first to suggest a relation between sun-spots and harvests. A review of sun-spots and the price of wheat, he said, indicated the conclusion "that the price of wheat has constantly risen during the time the sun has been without spots; and that it has always fallen when those spots began to re-appear." Philosophical Transactions of the Royal Society, 1801, Abstracts, p. 52.

9. "The Sun's Heat and Trade Activity," extracted with additions from the Contemporary Review (August, 1909), p. 8. See also p. 6.

periodic cycles in business.] The weather conditions represented by the rainfall in the central part of the United States, and probably in other continental areas, pass through cycles of approximately thirty-three years and eight years in duration, causing like cycles in the yield per acre of the crops; these cycles of crops constitute the natural, material current which drags upon its surface the lagging, rhythmically changing values and prices with which the economist is more immediately concerned.[1]

The primary purpose of this Essay [*Generating Economic Cycles*] is to show that a known natural cause originates an agricultural cycle which in turn generates other economic cycles. The perturbations in the ultimate cycles are not discussed, and these perturbations will doubtless be traced in part to natural, and, in part, to physical and social origins. Because one element of the weather, rainfall, has been seized upon and its effects have been tracked into remote regions, it does not follow that temperature, sunshine, and wind are regarded as negligible. Because a natural eight-year cycle has been isolated is no reason for denying the possible existence of other natural cycles, major or minor. Because some regularities in economic changes have been shown to originate in natural causes, it would be most unphilosophic to claim that the effects of the known regular causes may not be partially or totally offset by the effects of other causes, natural or social, regular or fortuitous. The object has been to find one cause and to follow its effects into their ultimate ramifications.[2]

B. Uneven expansion in the output of organic and inorganic materials is the cause of the modern crisis.

1. Economic Cycles: Their Law and Cause (New York, 1914), p. 149.
2. Generating Economic Cycles (New York, 1923), p. 11.

3. *Werner Sombart.* [Business fluctuations originate from uneven expansion in the output of organic and inorganic materials. The modern crisis, following a period of business expansion, is essentially the result of the fact that the timing and rhythm of the production of organic materials is completely different from that of inorganic materials. Great masses of capital and labor flow into the production of inorganic goods, and the production of organic goods cannot keep pace.][3]

C. A specific disturbance, such as an unusual harvest, the discovery of new mineral deposits, the outbreak of war, invention, or other "accident," may disturb economic equilibrium and set in motion a sequence which, however, will not repeat itself unless another specific disturbance occurs.

4. *Thorstein Veblen.* Periods of business prosperity "are pretty uniformly traceable to specific causes extraneous to the process of industrial business proper" such as crop situations and wars. . . . "Chronic depression, more or less pronounced, is normal to business under the fully developed régime of the machine industry." Given "a favorable disturbance of the course of business," Veblen's description of the ensuing sequence of events runs in terms of prices, credit, profits, capitalization of expected profits, the defection of profits, and recapitalization.[4]

5. *Irving Fisher.* We have considered the rise, culmination, fall, and recovery of prices. These changes are abnormal oscillations, due to some initial disturbance. . . . Any cause which disturbs equilibrium will suffice to set up oscillations. One of the most common

3. "Die Störungen im deutschen Wirtschaftsleben während der Jahre 1900 ff.," Schriften des Vereins für Socialpolitik (1904), p. 132.

4. The Theory of Business Enterprise (New York, 1915), chap. 7, pp. 251, 234, 194. See also pp. 185–190, 248, 254.

of such causes is an increase in the quantity of money. Another is a shock to business confidence (affecting enterprise, loans, and deposits). A third is short crops. . . . A fourth is invention. . . . Rise of prices generates rise of prices, and continues to do so as long *as the interest rate lags behind its normal figure*. . . . A fall of prices generates a further fall of prices. The cycle repeats itself as long as the rate of interest lags behind. . . . The peculiar behavior of the rate of interest during transition periods is largely responsible for the crises and depressions in which price movements end.[5]

It has long been recognized that a rising price level temporarily stimulates trade and that a falling price level depresses trade. Otherwise expressed, monetary depreciation stimulates, and monetary appreciation depresses, trade. . . .

In short, if the one *non-cyclical* or irregular factor, price-change, can so nearly explain the behavior of business, there is little room left for any *cyclical*, or regular, factors, especially as there must be numerous other non-cyclical ones always at work. . . .

Price-change is not here offered as a complete explanation of the fluctuations of "trade." No explanation could be absolutely complete. But it should be possible materially to reduce the unexplained residuum by making further studies (using a distributed lag) for other known factors. For instance, next to the influence of price-change the most important is probably that of the rate of interest.[6]

(*A. B. Adams.*) [The self-generating credit theories]

5. The Purchasing Power of Money (New York, 1913), pp. 70, 60, 68, 56.

6. "Our Unstable Dollar and the So-called Business Cycle," Journal of the American Statistical Association, June, 1925, pp. 179, 192, 198.

are correct in holding that a period of prosperity generates a crisis, that crisis grows into depression, and that recovery grows out of depression. They are . . . incorrect in holding that, granting the availability of plenty of credit, recovery generates a period of prosperity, or that prosperity grows out of conditions developed in recovery. . . . The cumulative upward trend of prices and expansion of output, known as the period of prosperity, cannot satisfactorily be explained as a result of inevitable conditions which were developed during previous periods of the cycle. . . . Increasing consumers' demand . . . cannot initiate rising prices to such a degree that cumulative prosperity will follow as a result. . . . The forces which may produce a favorable ratio between net product value of industry and the money income of the public are: wars, increase in gold production, favorable balance of trade, and a rapid expansion of industrial equipment.[7]

D. Variations in the mind of the business community, affected of course by specific economic disturbances, are the dominating cause of trade cycles.

6. *A. C. Pigou.* . . . We have found, as a dominating cause of trade cycles, wave-like swings in the mind of the business world between errors of optimism and errors of pessimism. . . . It may well be that some connection exists [between harvests and the trade cycle]. But, if it does, it is probable that harvest variations exercise their influence in the main, not directly, but indirectly, by stimulating or depressing the spirits of business men. . . . Harvests are not, of course, the only "accidental" fact by which the activity of industry is liable to be affected. There are also human inventions, the discovery of new mineral deposits, outbreaks of war, and many

7. Economics of Business Cycles (New York, 1925), pp. 211–212, 111, 129, 155.

other things. Dominant over all these, however, so far, at all events, as the rhythmic wave-like movements of the typical trade cycle are concerned, is the state of mind of the leaders of industry and commerce.[8]

(*Ellsworth Huntington.*) Business cycles appear to depend largely on the mental attitude of the community, and the mental attitude depends on health.[9]

(*M. B. Hexter.*) Can there be any doubt that there is a close connection between these fluctuations in birth-rate and death-rate and fluctuations in business enterprise? Business enterprise is the application of mental effort to the transformation of our physical environment. Anything which affects the emotions of men must necessarily affect their ability to make decisions, anticipate decisions, or postpone decisions. . . . The errors of optimism and the errors of pessimism may be closely connected with these variations in human emotions. It may well be that these waves of emotion which run through society from time to time are very closely related to these variations in births and deaths.[1]

II. Emphasis on Economic Institutions

E. Given our economic institutions (particularly capitalistic production and private property), it is their tendency to development which results in business fluctuations.

7. *Joseph Schumpeter.* [Recurring economic depressions preceded by crises 7 to 9 years apart are essentially a process of adapting the economic system to the gains or advances of the respective periods of expansion.

8. Is Unemployment Inevitable? by A. C. Pigou, G. Cassel and others (London, 1924). Chapter on "Correctives of the Trade Cycle," A. C. Pigou, pp. 103, 96.

9. World-Power and Evolution (New Haven, 1919), p. 29.

1. Social Consequences of Business Cycles (Boston, 1925), pp. 174–175.

This wave movement (*wellenbewegung*) is in itself not abnormal, but an essential part of economic progress, indeed I may add, the special economic expression of a quite general form of social development.][2]

8. *Gustav Cassel.* It is at once obvious that no general or single theory is possible for so varying and varied a phenomenon as crises, in the sense we have described. . . . The close observer of the economic history of the nineteenth century cannot fail to see a gradual change in the character of the phenomenon we call a crisis. This change, however, did not go so far as to bring out clearly the new type of crisis and conjuncture-movement until the seventies. On this ground there are certain objections to theories of modern conjuncture-movements which built too much upon material from the history of the earlier crises, and we are fully justified in confining our inquiries to the period after 1870. . . .

As long as there is a will to progress, and as long as the material conditions of the satisfaction of this desire require a large use of fixed capital, we must expect a fluctuation in the productive activity of the community akin to the present conjuncture-movements.

The increasing stringency of the supply of capital during a high conjuncture is hidden in a confusing way from the business world by the usual considerable increase of bank media of payment at such a time, as the individual employer naturally regards these as capital. When the banks afterwards find it necessary in their own interest to cut down this excessive supply of media of payment, the real scarcity of capital is suddenly and acutely felt. It is obvious that this may accelerate and greatly aggravate the crisis.[3]

2. "Die Wellenbewegung des Wirtschaftslebens," Archiv für Sozialwissenschaft und Sozialpolitik (vol. 39, August, 1914), pp. 1, 32.

3. The Theory of Social Economy (London, 1923), Bk. IV, pp. 506–507, 623, 628.

9. *E. H. Vogel.* [Assuming that the economic system is in a state of development, necessarily uneven, the author recognizes crises as turning points during periods of transition. In theory, therefore, crises are phenomena of a changing economic system. He finds, however, that the *origin* of crises is not strictly in the tendency to development of economic systems, but in the institution of private property through which the tendency becomes operative. It follows, therefore, that economic development and crisis do not stand in a causal relationship to each other, and that, assuming a decrease of the inequality in the distribution of wealth under private ownership, the "self-generating" crisis as a phenomenon of our system would become less violent, less frequent or perhaps disappear.][4]

(*R. E. May.*) The great commercial crises of the 19th century are the result of increased productivity of labor.[5]

(*C. F. Bickerdike.*) A smooth state of growth, with uniform price-level, is possible if the two conditions are fulfilled: (1) growth is uniform, (2) saving and the creation of bank credit always continually equal the amount required for financing growth as distinct from maintenance production. If these conditions are not fulfilled, there is almost inevitably involved not only disturbance of individual prices, but disturbance of the general level of prices, and, under ordinary conditions of individualism, oscillation of trade activity.[6]

F. The capitalistic or roundabout system of production is the primary cause of business fluctuations.

4. Die Theorie des volkswirtschaftlichen Entwickelungsprozesses und das Krisenproblem (1917), pp. 391–392.

5. Das Grundgesetz der Wirtschaftskrisen (1902), p. 72.

6. "Social Interests in Relation to Saving," Economic Journal, September, 1924, p. 422.

10. *Arthur Spiethoff.* [Ever since we have had capitalistic production on a large scale uninterrupted expansion of business has been lacking. Numerous exterior occurrences such as war, fluctuations in crops and population, epidemics, natural phenomena, changes in economic organization, gold production, etc., interrupt steady development. But there are endogenous causes of the *regular* undulations of business which spring from our economic institutions.

The "normal" is neither expansion nor depression nor, needless to say, crisis. The normal of the free, money-using, capitalistic market is the cycle of fluctuations.][7]

11. *D. H. Robertson.* [Starting] at the nadir of depression, we find that the aggregate of industrial production begins to increase . . . (1) due to the adoption of improved methods, etc., under the stimulus of depression . . . (2) an increased bounty of nature . . . (3) an increase in the expected future productivity of constructional goods . . . (4) the expansion, whether owing to an increase of confidence or to increased supplies of gold, of the volume of credit currency. . . . [But] each period of "expansion" contains as it were the seeds of its own dissolution. [A decline in the demand for constructional goods will occur] . . . and the features of depression will continue to prevail until the forces enumerated at the beginning of this summary come into play.[8]

[Mr. Robertson, in his most recent book, dissents from the doctrine that the explanation of the trade cycle is to be found either] in the defects of our monetary system or in defects in the judgment and temperament of the leaders of the business world. [He quotes

7. "Krisen" in Handwörterbuch der Staatswissenschaften (1925, 29 und 30 Lieferung. Bog. 1–10 des VI Bandes), p. 82.

8. A Study of Industrial Fluctuation (London, 1915), pp. 239, 8, 241.

Professor Cassel with approval that] as long as there is a will to progress, and as long as the material conditions of the satisfaction of this desire require a large use of fixed capital, we must expect a fluctuation in the productive activity of the community akin to the present trade cycles. [9]

[The essence of Robertson's theory of business cycles—at least, of those cycles in which there is a pronounced demand for circulating capital such as occurs during great expansion of constructional work—is, that] the actual 'crisis' may be correctly described as due to a 'deficiency of capital' in the sense of a deficiency of the activity Lacking.

[But the crisis may occur, the author holds, *before* there is a downward] revaluation of the net advantage of acquiring instruments and a consequent decline in the quantity of them demanded. . . . Owing to the entanglement, in times of emergency, of the market even for *Long* lacking with the banking-system, the crisis may occur at a moment dictated by the general state of strain upon the banking-system rather than by the stage which has been reached in the true constructional cycle. [1]

12. *Albert Aftalion.* It is the existence and the universality of the new industrial technique which has caused the appearance and repetition of economic cycles. . . . The irregular oscillations of earlier times have been transformed into extended cycles in which the successive phases grow out of each other and together constitute an endless chain. [2]

(*T. E. Burton.*) The important feature in their occurrence [crises and periods of depression] is the in-

9. Banking Policy and the Price Level (London, 1926), p. 1.
1. Ibid., pp. 90, 91, 90.
2. "Le Rhythme de la Vie économique," Revue de Métaphysique et de Morale (1921), p. 278.

creasing proportion of expenditures in preparation for increased production, manifesting itself in the formation and prosecution of new enterprises, and the building on a large scale of railroads, ships, and factories. . . . At times these expenditures for increased production attain an unusual proportion as compared with the ordinary expenditures for annual consumption and support.[3]

(*G. H. Hull.*) . . . After a country has become chiefly manufacturing, no combination of favorable influences has been strong enough to develop a boom, *except on low prices of construction*, and that after abnormally high prices develop, no combination of favorable influences has been strong enough to keep the boom going beyond the time necessary to complete the volume of extra construction made up of old low-priced contracts.[4]

(*L. H. Frank.*) The proposed theory looks primarily to the variations in the rates of production-consumption of consumers' goods, for an explanation of business cycles. . . . If business men did not overbuy and accumulate stocks of goods, there would be no "booms" of feverish activity, rising prices, increasing bank loans, and so on, and consequently no following crisis and depression, with curtailed buying and production, while old stocks are being used up. . . . The "cause," if we wish to use that term, of business cycles (the recurrent fluctuations in the magnitude of economic activities) is to be found in the habits and customs (institutions) of men which make up the money economy, with its money and credit, prices, private property, buying and selling, and so on, all loaded, so to speak, on the industrial process.[5]

(*T. W. Mitchell.*) [In supplementing the behavioristic

3. Financial Crises (New York, 1902), p. 306.
4. Industrial Depressions (New York, 1911), p. 217.
5. "A Theory of Business Cycles," Quarterly Journal of Economics, August, 1923, pp. 628, 638, 639.

theory of L. H. Frank, Mr. Mitchell says, the underlying causes of business cycles are the following.] (1) Because of the length, in time, of the whole production process from the natural resources to the ultimate consumer, and the length of time required for selecting and training personnel in building up a production organization, production rates that have fallen below demand rates cannot quickly be augmented to equal the demand rates, but require many months to be so augmented. (2) There is deception and illusion all along the line as to the real extent of demand, due to over-ordering by customers. (3) The illusion is accentuated under our atomistic competitive system by counting the same demand several times over as it is presented to different atoms in the industrial organization. . . . The cyclical movement, once started, tends to complete and repeat itself automatically and perpetually. [6]

(*J. M. Clark.*) But aside from all questions of buying at the cheapest time, the physical need for new equipment shows a tendency to fluctuate more intensely than the demand for the finished product, because it depends, not upon the total volume of demand, but upon the rate of growth (or shrinkage): the amount added, for example, during the current year. In other words, the velocity of output in the capital-making industries depends, not on the velocity of output in the industries which use the capital to make goods for consumption, but on its acceleration. . . . If the demand for finished products stops growing, the need for additional equipment naturally falls to zero, while a relatively slight decline in the demand for consumption means that the need for additional equipment becomes actually a minus quantity. . . . *under perfectly steady prices there would still be*

6. "Competitive Illusion as a Cause of Business Cycles," Quarterly Journal of Economics, August, 1924, p. 651.

great booms and depressions in the capital-making industries and resulting booms and depressions in industry at large. There are forces at work which translate all fluctuations of consumers' demand into greatly intensified fluctuations in the demand for the means of production, and these react back upon the demand for consumers' goods, so that the greatest fluctuations here are not original, but derived, and result from fluctuations of employment in other industries. . . . The only remedy for this is to induce people to spend money in the dull times for equipment which they do not immediately need, and for materials to work up "to stock." [7]

G. Excessive accumulation of capital equipment accompanied by mal-distribution of income are responsible for lapses from prosperity to depression.

13. *Mentor Bouniatian.* Two ideas, with others, are at the base of our theory: (1) the idea that the modification of the social utility of wealth, resulting from changes in the relation between the production of goods and the need for them, is a cause of the general advance of prices in a period of prosperity . . . and of decline in a crisis; (2) the idea that the time-using capitalistic process . . . is at the basis of a period of advance. . . . These two phenomena seem to us, like the mechanism and movement of prices, merely the indispensable conditions, on account of which *a constant tendency toward excessive accumulation, inherent in the capitalistic system,* leads to periodical over-production. . . . Increase of the inequality of distribution of wealth is a consequence of the exaggerated tendency toward the accumulation of capital. . . . Inequality of distribution prevents the harmonious development of production and consumption, and facilitates the tendency toward over-produc-

7. The Economics of Overhead Costs (1923), pp. 390, 406.

tion. Thus is produced a vicious circle which gives its imprint to economic life.[8]

14. *M. Tugan-Baranowsky.* Under the conditions of the capitalistic economy, the difficulty is not one of production but of finding the outlet, the market. . . . Every increase in the process of the accumulation of capital is equivalent to an absolute reduction in social consumption. . . . Credit merely aggravates crises; it is not the primary cause. The crises of capitalism have deeper roots, in the nature of our capitalistic system. The necessity of crises results from three peculiarities of our economic system: (1) *the capitalistic economy is self-antagonistic,* where the worker is simply a means of production for the entrepreneur; (2) *it differs from other such systems* (slavery, feudalism) by its tendency to unlimited production; . . . (3) as a unit, *it is destitute of organization;* an orderly distribution of social production among the different branches of industry is lacking. These three characteristics of capitalism make economic crises inevitable. . . . The circulation of social capital, which leads inevitably to the capitalistic cycle and crisis, embraces production, exchange, and distribution. . . . The major portion of the social income falls to the capitalists. . . . The inadequate remuneration of labor . . . is the fundamental cause of the rapid accumulation of social capital, which provokes crises.[9]

15. *J. A. Hobson.* The roots of irregularity and fluctuation of industry lie in defects of distribution and of demand, not in the miscalculations of business men or the aberrations of the monetary system, which are but the exaggerated reflections of the real facts of in-

8. Les Crises économiques (Paris, 1922), pp. xvi (italics mine), 360.

9. Les Crises industrielles en Angleterre (Paris, 2d ed. revised, 1913), pp. 190, 214, 252, 279.

dustry. . . . [There exists a normal tendency to try to save and apply to capital purposes an excessive proportion of the general income.] . . . A solution of the problem can only be found by such economic, social, and political reforms as secure a drastic redistribution of the product of industry.[1]

(*W. H. Beveridge.*) . . . The simple and well-nigh universal fact of industrial competition [accounts for a] tendency to over-production in all industries. [The competition theory assumes the creation of a substantial annual surplus] for increasing the means of production for the future. . . . With the present amount and distribution of the national dividend . . . and in a competitive system of industry this excess in the means of production is commonly realized.[2]

(*Minnie T. England.*) The financial crisis, I maintain, is a situation in which a larger number than usual of debtors are unable to meet their obligations, primarily because industry and finance have failed to yield returns as large as the estimates upon which borrowings or subsequent expenditures were based, and secondarily because of a contraction of credit. . . .

On the industrial side of the crisis cycle the dominant factor is the condition of promotion. . . . The increased demand for capital goods is reënforced by heavier de mands for consumption goods, and general rising prosperity is the result. Good times, therefore, are due to the investment of the social savings. . . .

The *occasion* of the acute stage of the crisis, as distinct from the *cause*, is therefore the loss of confidence in the course of future enterprise. . . .

The *cause* of the crisis, as distinguished from the *oc-*

1. Economics of Unemployment (New York, 1923), pp. 149, 147, 150.
2. Unemployment (London, 3d ed., 1917), pp. 59, 61.

casion, is the disturbance of the industrial equilibrium which results from the investment of social savings.[3]

(*E. J. Rich.*) Proposition: A cause of industrial depression is too rigid economy on the part of the individuals of the community — an economy which is induced by a desire to purchase interest-yielding investment.[4]

(*N. Johannsen.*) The true cause lies *outside* of it [the regular business routine]. It is a factor of irresistible force which, when active, will cause widespread unemployment and depression; a factor not known to the profession [economic experts], but revealed in the pamphlet herewith, and to be called "impair savings" — consisting of such savings as, tho extracted from the people *as income* for the savers, and tho not withdrawn from the general circulation, do not in the course of such circulation reach the people *as income for the people* (by calling for work to be done) and do not replace what the savers extracted from them; thus impairing their income and their purchasing power.[5]

Once we comprehend the dual nature of the saving process — stimulating business at one time and depressing it at another — we shall not only get a clearer view of the causes underlying depressions but will also know in which direction to look for the remedy.[6]

The savers, or those acting for them, will not employ their funds so as to create new wealth or productive capital, but will simply confine themselves to buying capital goods (fixed property, securities, etc.) already in existence. The savings funds re-enter the general circulation of industry and trade not by the act of in-

3. "Promotion as the Cause of Crises," Quarterly Journal of Economics, August, 1915, pp. 749, 750, 766.

4. A Fundamental Principle of Political Economy, Pamphlet issued in 1892, p. 5.

5. Printed sheet issued in 1925 and signed by N. Johannsen.

6. A Neglected Point in Connection with Crises (1908), p. iii.

vestment, but by the expenditures of the impoverishing borrowers and sellers, who expend the money to meet their living expenses or their losses in business. No working forces, therefore, will be called into action, by the act of investment, under such circumstances.[7]

H. The fluctuation of money profits is the center from which business cycles originate (eclectic theories).

16. *W. C. Mitchell.* Since the quest of money profits by business enterprises is the controlling factor among the economic activities of men who live in a money economy, the whole discussion [of the rhythmical alternations of prosperity, crises, and depression] must center about the prospects of profits. . . . The quiet processes of business recuperation during dull times are quite competent to develop into revival without the adventitious help of any "disturbing circumstance." [8]

17. *Jean Lescure.* [During a period of advancing business and the creation of new enterprises there comes a time when further addition to social capital becomes impossible for] the costs of installation of a factory and, after its installation, the cost of production represented by the price of materials, the rate of wages, and general expenses (rent, provision for employees, etc.) have so increased that all hope of realizing a normal profit must be abandoned. . . . Expected profits are not realized. The spirit of enterprise becomes paralyzed. . . . At the end of a period of depression, prices, in general, and particularly those of the means of production, have diminished so that the conditions are ripe for the beginning of a period of advance.[9]

7. A Neglected Point in Connection with Crises (1908), p. 80.
8. Business Cycles (University of California, Berkeley, 1913), pp. 450, 453.
9. Des Crises générales et périodiques de Surproduction (Paris, 3d ed., 1923), pp. 459, 461.

(*T. N. Carver.*) A slight rise in the price of consumers' goods will so increase the value of the producers' goods which enter into their production as to lead to larger investment in producers' goods. The resulting larger market for producers' goods again stimulates the production of such goods, and withdraws productive energy from the creation of consumers' goods. This for the time tends to raise the price of consumers' goods still higher, and this again to stimulate still further the creation of producers' goods. There is no check to this tendency until the new stock of producers' goods begin to pour upon the market an increased flow of consumers' goods. This tends to produce a fall in their value, which in turn produces a still greater fall in the value of producers' goods, and so the process goes.[1]

J. The nature of the flow of money and credit, under our present monetary system, is the element responsible for the interruption of business prosperity.

18. *R. G. Hawtrey.* The trade cycle is a purely monetary phenomenon. . . . So long as credit is regulated with reference to [bank] reserve proportions, the trade cycle is bound to recur. . . . The normal instrument of deflation is an increase in the rate of interest on short-period indebtedness.[2]

There is an inherent tendency toward fluctuations in the banking institutions which prevail in the world as it is. . . . A depression of trade is in essence a general slackening of the money demand for commodities and an expansion of trade is a general augmentation of the money demand for commodities.[3]

1. "A Suggestion for a Theory of Industrial Depressions," Quarterly Journal of Economics, May, 1903, p. 499.
2. Monetary Reconstruction (New York, 1923), pp. 141, 144, 54.
3. Good and Bad Trade (London, 1913), pp. 199, 272.

19. *Major C. H. Douglas.* Never during the past 50 years has any industrial country been able to buy its own production with the wages, salaries, and dividends available for that purpose, and in consequence, all industrial countries have been forced to find export markets for their goods.[5]

As we have previously noticed, individuals in the modern world obtain their purchasing power through three sources — wages, salaries and dividends. This purchasing power is taken away from them through the medium of what we call prices, and it will be quite obvious to you that the first thing necessary is to make total purchasing power equal to total prices, a proposition which has no other known solution than by the addition of a credit issue to purchasing power. That is to say, *we must give the consumer purchasing power which does not appear in prices.* . . .

The essential point to notice, however, is not the profit, but that he [the producer] cannot and will not produce unless his expenses on the average are more than covered. . . .

"Capitalism" is not a system of administration at all; it is a system of fixing prices in relation to costs.[6]

20. *W. T. Foster and Waddill Catchings.* No matter how readily loans may be obtained, our present systems of production and finance give no assurance that producers of commodities *will* borrow and place in circulation, as wages, interest, dividends, and so forth, the right amount of money, at the right time, to take their commodities off the markets at current prices. In other words, there is no necessary correlation between the amount of money which is actually borrowed to finance increased production within a given year and the amount of money which consumers must have in order

5. Social Credit (London, 1924), p. 20.
6. The Control and Distribution of Production (1922), pp. 27, 67, 77.

to buy the additional commodities at the prevailing price-level. . . . In this whole movement [of the business cycle], the central factor is a changing volume of money flowing through various channels in such a way as to cause, or at least to make possible, changes in the annual equation and the price-level.[7]

In the remaining chapters [of Profits] we purpose to demonstrate two propositions: *First, there is no possibility of attaining the economic aim upon which all are agreed unless consumers somehow obtain enough money, year in and year out, to buy the goods about as rapidly as they are produced; second, the present money and profit economy does not enable consumers long to obtain the required money.*

The flow of money to consumers depends mainly on productive activity; but productive activity depends mainly on the flow of money to consumers. Where are we to break into this circle in order to find the place where influence should be brought to bear to sustain prosperity? Evidently, wherever we can increase consumer demand; for if we increase productive activity without proportionately increasing the flow of money to consumers, prosperity is short-lived; but if we increase the flow of money to consumers in proportion to increased productive activity, prosperity can continue.

In short, the one thing that is needed above all others to sustain a forward movement of business is adequate consumer purchasing power. With our financial world as it is to-day, let it be known that there will be consumers with money to spend for any known and producible goods, and the goods will be produced. Give consumers the money, and organized business will look out for the rest. There will be no shortage of money on the producing side; the credit and investment world is

7. Money (Boston, 1923), pp. 348, 350.

always able and eager to take care of that. A willing buyer does not have to wait long, but a willing seller may have to wait forever.

According to our theory, the most important factor in this entire cyclical movement [to which all other factors are secondary] is a changing volume of money flowing through various channels in such a way that the flow of money to consumers . . . presently fails even to keep pace with the flow of goods. Thus deficient consumer purchasing power prevents the substantial sustained progress toward attaining the economic aim of society which adequate consumer demand would bring about.[8]

(P. W. Martin.) Increase working capital — and industry cannot sell all it has produced at prices making production worth while.

Working capital can be increased in two ways — by retaining part of the profits made on sales, or by borrowing from the community either directly or through a bank. Either of these actions upsets the essential equilibrium between the flow of prices on the one hand and the flow of wages and dividends with which these prices are to be paid on the other.

If it were possible to increase the quantity of money at a rate neither more nor less than but exactly sufficient to buy the goods actually coming on the market, the crisis would never occur.[9]

(H. Abbati.) In view, therefore, of existing conditions whereby quantities of *credit money* are continually cancelled as a result of saving, and whereby, in any case, the *expansion* of *credit money* is limited arbitrarily by the total supply of *cash* in a manner bearing no relation whatever to the production of commodities and services, any *expansion* in the total supply of *cash* and *credit*

8. Profits (1925), chaps. xx, xxix.
9. The Flaw in the Price System (London, 1924), pp. 34, 37, 83.

money must invariably without much delay fail to attain or maintain an *expansion* proportionately as great as the total supply of commodities and services for sale.

[Remedy:] the total supply of money would have to be maintained at all times in the same ratio to the total supply of commodities and services for sale.[1]

(*W. H. Wakinshaw.*) There are three outstanding principles implicit and explicit in the Theory of Social Credit and its working, as discovered by Major C. H. Douglas. They are:

(1) That the end and aim of an economic system is to provide goods and services for the Many, rather than profit and power for the Few. . . . (2) That all Money is invariably nothing else but Goods-Tickets: its expansion can be indefinite, and should be therefore exactly *pari passu* with the net gain in the production of new goods, neither more nor less. . . . (3) That there is only one point of intersection between Goods and Goods-Tickets — the Price — and that to avoid the Scylla of progressive Deflation and the Charybdis of Inflation, the appropriate adjustment must be made in the Price. . . . But there is a Net Increase every time Goods are made: clearly, therefore, there should be a proportionate increase of Goods-Tickets, neither more nor less. This is obtained by the famous Douglas Price Factor, which by calculating and furnishing the extra Tickets simultaneously with the Goods, releases us from our economic fallacy, now in consequence silently but relentlessly hurrying Humanity into a second and even greater World-conflict.[2]

(*H. B. Hastings.*) [The underlying causes of commercial crises are:]

1. The fact that business concerns as a whole do not

1. The Unclaimed Wealth: How Money Stops Production (New York, 1924), pp. 111, 186.

2. The Solution of Unemployment (London, 1924), pp. vii–viii.

disburse an amount of money equal to the value of the things which they produce, in addition to all money received from outside sources.

2. Dealer buying to keep stocks commensurate with sales, forward buying, and speculation: All of which bring about (*a*) the relative overdevelopment of those industries producing tangible goods intended for the satisfaction of individual wants, and (*b*) an almost continuous advance in prices.

3. The accumulation of stocks held on speculation.

4. The use of savings and profits to pay for the creation of goods, other than those used in the processes of production and distribution.

5. The lag in the flow of interest and profits into the hands of ultimate buyers, on account of the intercorporate ownership of securities.[3]

(*A. H. Hansen.*) The issuance of bank credit simply redistributes purchasing power, reducing the real purchasing power of income receivers generally, and increasing the purchasing power of entrepreneurs able to secure bank credit. It is this redistribution of purchasing power, accomplished through the instrumentality of banking institutions, that changes demand, upsets prices, affects the profit margin, and therefore production. Here in short, may be found the fundamental cause of the business cycle. . . . The downward movement like the upward movement tends to become self-perpetuating. But as the upward movement culminates because of the strain placed upon bank reserves through an undue extension of bank credit, so the downward movement comes to a close because of the great accumulation of bank reserves due to the reduction of outstanding bank credit and the return of money from hand to hand circulation following the decline of prices. This

3. Costs and Profits (Boston, 1923), pp. ix–x. See also p. 165.

continued accumulation of reserves leads bankers progressively to lower discount rates to a point low enough to make the employment of bank credit again profitable. New securities are freely issued, bank loans are readily obtainable, and the purchasing power of business enterprises increases. Thus the upward swing returns and the cycle repeats itself.[4]

(W. C. Schluter.) The foregoing analysis, based upon our study of the period 1908 to 1913, seems to indicate the following conclusions: *(a)* That the limits of elasticity in the credit system, defined on the one hand by the minimum of credit requirements in depressions, and, on the other, by the amount of bank reserves regulate the spurts in prices and production, namely, the lengths of the business cycles herein examined. *(b)* That the relation between the normal trend of agricultural production and industrial development during this period was one of the several important factors which affected the relatively permanent requirements of credit, and the supply of bank reserves. *(c)* That the moment when the two cycles of 1908 to 1911 and 1911 to 1913 attained their zenith and their nadir was determined chiefly by the supply of bank credit and the use made of it.[5]

(Bilgram and Levy.) The strictly deductive line of investigation pursued in the foregoing pages has consistently led us to the conclusion that the underlying cause of the economic disorder is the legalized restriction of the right to use credit as a medium of exchange.[6]

The selection of the authors for quotation in the

4. Cycles of Prosperity and Depression in the United States, Great Britain and Germany: A Study of Monthly Data, 1902–08 (University of Wisconsin, Madison, 1921), pp. 106, 108.

5. The Pre-war Business Cycle, 1907 to 1914 (Columbia University, New York, 1923), p. 189.

6. The Cause of Business Depressions (Philadelphia, 1914), p. 456.

classification just given was not in all cases for the same reasons. Thus, W. S. Jevons is quoted, altho his sun-spot theory is not accepted today, for the reason that the theory has been widely commented upon; T. E. Burton and G. H. Hull are quoted because they are the authors of well-known books on the general subject; and Major C. H. Douglas and a number of his followers are quoted because of the popular attention given to their theories in England.

The lengths of the quotations do not correspond to the importance which I attach to the theories. Thus, Aftalion, a leading French writer on business cycles, is quoted very briefly because he states succinctly the cause which he assigns for cycles. Altho in *Les Crises périodiques de Surproduction* he stresses diminishing utilities in explaining the possibility of general over-production, he clearly specifies the modern time-using capitalistic production as the cause of the glut in the market.

I found that in some cases an author of several books or articles on the subject had apparently changed his emphasis in the later publications. In these cases quotations from both the earlier and later publications are given. Thus, H. L. Moore in *Generating Economic Cycles* qualifies the theory of periodic cycles given in his earlier *Economic Cycles: Their Law and Cause*, and so quotations from both books are given. Similarly, the quotations from Irving Fisher and D. H. Robertson reveal the changing emphasis of these authors.

As was indicated at the outset, the object of the present instalment of "Theories of Business Cycles" is merely to present a classification of theories with supporting quotations. A critical examination of these theories will be undertaken in later articles.

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EQUITY: THE ACTORS' TRADE UNION[1]

SUMMARY

I. The Actors' Equity Association formed in 1913. — Affiliation with the Federation of Labor, and successful strike of 1919, 130. — Maneuvers of the managers, 132. — Virtually a closed-shop situation emerged, 133. — II. Complete success of the actors and their gains, 135. — The contract of 1924 distinctly a minimum contract, 139. — III. Further consideration of the contract, 140. — Benefits to the managers, and disciplinary power of Equity, 141.

I

If Mr. Lee Shubert were to recall the events of a dozen years ago, he would scarcely set himself up as a prophet. For in 1913, when the formation of the Actors' Equity Association was announced, Mr. Shubert declared publicly, "The scheme is as impracticable as the actor himself," and went on to tell of the easy life of the actor and the great risks of the manager. Those familiar with recent theatrical history know that Mr. Shubert shot wide of the mark. For not only has the Actors' Equity Association proved to be "practicable," but it may be questioned whether any other union has, in so short a time, gained so fully its stated ends.

These ends, as originally set forth, were "the correction of abuses that had crept into the theatre and the adoption of a uniform contract that would be acceptable alike to the fair-minded manager and the fair-

1. A detailed, fully documented study of trade-union activities of actors, by the present writer, was published by the United States Bureau of Labor Statistics, in February, 1926, as Bulletin No. 402: Collective Bargaining by Actors. The author wishes to express his gratitude to Mr. Ethelbert Stewart, Commissioner of Labor Statistics, for permission to use, in this short article, several items which appeared in the government publication.

minded actor." All of these aims were soon included in the uniform contract, and all efforts concentrated upon urging its acceptance by the managers. For several years the actors used only the method of argument. Time and again statements were given out to the effect that Equity was not a labor union of the ordinary type, that it would not employ the strike, nor did it mean to ally itself with organized labor. The managers, with apparently nothing to fear, declined to be interested in the proposed standard contract. Without bothering to condemn its provisions, they yet refused to accept them. Mr. William A. Brady even went so far as to say: "Your A. E. A. contract is absolutely fair, but I'll never adopt it until I am forced to."

For six years, with contract in one hand and olive branch in the other, Equity representatives continued to place their claims before the managers, but to no avail. It is true that in 1917 the managers' organization — the United Managers' Protective Association — agreed to adopt the standard contract for one year, but investigation proved that the contract was actually used in only one fifth of the companies controlled by members of the U. M. P. A. Wearied finally of what Wilton Lackaye termed "whereasing and resoluting," Equity affiliated with the American Federation of Labor, and declared a strike in August, 1919. This action was not taken hastily. For four years Equity had been considering the desirability of an alliance with organized labor; the affiliation had been sanctioned, almost unanimously, by vote of the membership; and the final step was taken only after the managers had refused repeatedly to submit the points at issue to Mr. Taft and Mr. Hughes, as arbiters, and, furthermore, after they had denied the right of the Actors' Equity Association to bargain for its members. Thus the very

existence of Equity was at stake, and it was this fact that precipitated the strike.

The actors' strike, could it be dramatized, would provide heroic characters and scenes of tense interest. There was, for example, the late Frank Bacon, who risked the first big success of his career to cast his lot with the actors; there was the musical comedy star who is reputed to have lost in all a quarter of a million dollars through his allegiance to Equity; and there were, of course, hundreds of lesser players whose stakes, tho small, were relatively great because they had so little to go on. There were actors' parades and huge benefits, free sidewalk performances that discouraged box-office expenditure, Broadway picketing followed by arrests; and there were warnings, threats, suits, and the ever-ready injunctions. But most interesting of all, perhaps, was the sticking quality of the actors. Several years before, a weekly magazine had spoken editorially of the "passiveness, faintheartedness and incapacity for coöperation" that seemed to be traits of the artistic temperament. But these same temperamental players displayed a talent for aggressive group action that amazed the leaders of organized labor; and it was not the actors but the managers — the business men of the theatre — who failed to hold together as the battle waxed hot.

For thirty days the managers held out, at a cost of several million dollars, and then capitulated. Samuel Gompers pronounced the winning of this strike the greatest victory in the history of the labor movement. Certainly the actors had cause for rejoicing, for they won a five-year agreement recognizing definitely the right of the Actors' Equity Association to represent its members in their dealings with the managers, and providing for a standard minimum contract and the arbi-

tration of all disputes. For two years the Association operated on an open basis, and union and non-union actors played side by side. But the plan did not work well. With Equity gains applying to union and non-union players alike, there was little incentive to membership, and Equity's ranks began to thin out. To remedy the situation, the closed-shop principle (under the name "Equity Shop") was applied in 1921 to all companies except those managed by members of the Producing Managers' Association, the managerial organization which succeeded the old United Managers' Protective Association in 1919. The five-year agreement with the P. M. A. prevented at that time a further extension of the closed shop, but upon the expiration of the agreement in 1924 the Equity Shop principle came into general use. Not, however, without some friction, for several suits were instituted and injunctions secured which aimed at preventing the further spread of the closed shop. Certain members of the P. M. A. held out so long for a renewal of the old agreement, under which they could operate an open shop, that other members whose business demanded haste organized a new managerial group — the Managers' Protective Association — and negotiated a new agreement in which it was specified that at least 80 per cent of all casts should be union members. Non-members of the Protective Association must now employ 100 per cent Equity casts, if they wish to use any union actors. The Producing Managers' Association, having outlived its usefulness, was recently granted permission by the Supreme Court to dissolve, upon request of the majority of its members.

A word may here be said of the Actors' Fidelity League, which came into the field just before the end of the strike. This was a group of some four hundred

"artistes," who were unwilling to ally themselves with "labor." There is reason to believe, however, that the League was in reality the good old company union, inspired by the managers in the last desperate days of the strike, with the hope of disrupting the Equity Association. Prominent in Fidelity were George M. Cohan and the late Henry Miller, and others who were managers as well as actors; and Howard Kyle, former Secretary of Equity, who had been supplanted by Frank Gilmore, became Secretary of the new organization. The fact that the managers promptly tendered to Fidelity members a contract much more favorable than that demanded by Equity, lends color to the charge that the Producing Managers' Association (now defunct) was not so much interested in fighting the standard contract as in smashing a strong labor organization which would be able to enforce the contract once it was won. It will be remembered that the Keith interests had used the National Vaudeville Artists, their company union, in wiping out the White Rats, the federated vaudeville union, in 1917. But the Actors' Fidelity League was was not so helpful. Somehow it failed to catch on, and after Equity's victorious strike the League dwindled away until it had fewer than a hundred members.

Equity officials have long insisted that Equity Shop is not a closed shop. What they have really meant to emphasize, as a study of their statements clearly shows, is that the Actors' Equity Association is not a closed union. For Equity Shop *is* a closed shop, since, with unimportant exceptions, an Equity member is not permitted to play in a cast which includes non-union actors. On the other hand, membership in Equity is open to all who can qualify, and anyone is eligible to membership who is enough of an actor to secure a contract. Thus Equity makes no attempt to restrict the labor supply

in such way that wages may be raised artificially. Indeed, the Association has never shown interest in the question of salaries, tho the Chorus Equity Association (which holds a separate charter under the international union) has established a minimum wage for its members.

The enforcement of the Equity Shop principle enabled the union to retrieve its membership losses, and to add to its numbers those who had never bothered to join and all who have since entered the profession. Equity now has a membership of more than seven thousand, which is estimated to include fully 98 per cent of those who not only call themselves actors but who actually earn a living as players on the "legitimate" stage. Non-members with whom Equity players may appear in casts are (through courtesy of the Equity Council) the eighty-three actors who were paid-up members of the Actors' Fidelity League on September 1, 1923, and (through the so-called "eighty-twenty agreement" with the Managers' Protective Association) a small number of independent performers, probably not above fifty in all.

For six years the actors petitioned and gained nothing. Then for a like period they employed militant measures and won all that they had originally asked, and more. In their dozen years of labor experience, Equity members have witnessed the obsequies of two managerial groups that opposed them, and the disintegration of a rival actors' association. They have adopted and enforced a policy which seems likely to prevent any serious loss of membership. Finally, they have won the good-will of the public, and by methods of moderation and fair-dealing, the good-will of the managers as well.

II

The gains of the actors through collective bargaining are embodied in the Equity Minimum Contract of 1924. These gains may be examined briefly under several heads.

1. *Recognition of the Union.* This is the most fundamental of union rights, since without it collective bargaining is impossible. The strike of 1919 was primarily a fight for the establishment of this right. Not only has the principle been conceded by the managers, but the actors now have the strength to enforce it.

2. *Arbitration.* A Joint Arbitration Board was originally created, to which were referred all disputes relating to contracts and agreements. Equity has always strongly favored the settlement of claims and disputes by arbitration, and sought this means of settlement before going on strike. A decision of the Board was final and binding on both parties. This Board functioned successfully from 1919 to 1924. Since that time disputes have been adjusted by arbiters supplied by the Arbitration Society of America.

3. *Security of Employment.* In pre-Equity days, shows could be withdrawn at any time, and the players thrown suddenly out of work without notice. The Equity Contract provides that, once a play has gone through the first week of rehearsals, the actors must be given two weeks' employment, or salary therefor. Whenever it is decided to withdraw the play, one week's notice must be given, or full salary paid. In the dismissal of an individual actor, the requirement is two weeks' notice or salary for that time. This clause of the contract is reciprocal; and provides a degree of security for the manager. For an actor is not permitted to withdraw from a cast without giving two weeks' notice of

his departure. Failure to give notice entails a fine of two weeks' salary, which is paid to the aggrieved manager.

4. *Elimination of the "Joker Clause."* The so-called "joker clause," which appeared in most of the older theatrical contracts, was a provision giving the manager the right to dismiss an actor without notice whenever the latter's services should prove unsatisfactory. Since the manager was in each instance the sole judge of what constituted satisfactory service, this clause was frequently used by unscrupulous managers to discharge actors summarily. The joker clause has now been done away with. Tho a manager may still, without notice, dismiss an actor for cause, the cause must be sufficiently good to withstand examination by the Equity Council.

5. *Continuity of Employment.* Equity takes the position that, once the season has opened, the actor is entitled to continuous work until its close. Several exceptions are made, to take care of emergencies such as the illness of a star, or the need of rewriting or recasting the play; but these are subject to close scrutiny of the Equity Council. With such exceptions, actors must be given continuous employment from opening to close of the season (however short the season may be), except for possible lay-offs during those traditionally hard times of the theatre, the week before Christmas and the week before Easter.

6. *Full Pay for All Work.* Until Equity effected a change in 1919, it had been the custom of managers to pay only half salaries for Holy Week and the week preceding Christmas, as well as for other times when business was below par. Under the present agreement, full salaries must be paid for all time played. A manager may lay his company off during the two weeks mentioned above, if he anticipates such poor business as to

involve a loss; but if the show runs, full salaries must be paid. In the face of continuously bad business, a manager may cut salaries with the consent of his players, in order to keep the show running. Such reductions are thought of as quite distinct from the old half-pay cuts; but Equity officials warn their members to be wary of making wage concessions even under these conditions.

7. *Pay for Extra Performances.* Equity has established a standard week of eight performances. Prior to the adoption of the Equity Contract, managers made a practice of calling for extra performances whenever there was promise of profit. The minimum number of performances given weekly was eight, — the usual six evening programs and two matinées, — but in some theatres there were nine performances regularly each week. Added to these were perhaps a dozen holiday matinées in the course of a season; and, in cities permitting Sunday amusements, matinée and evening performances on that day. Since the actor's contract called for a weekly salary, these extra programs meant no additional income to him, except in rare instances of managerial generosity. Actors are now paid extra for all performances above eight a week, on a *pro rata* basis.

8. *Limitation of Free Rehearsals.* Even now the actors give what will seem to most persons a liberal amount of time for free rehearsals. In dramatic productions, four weeks of unpaid rehearsals are allowed; and in musical comedies and revues, five weeks. But this is not long in comparison with free rehearsal periods of pre-Equity days. There was then no limit to the rehearsal time that might be required by a manager. In the field of drama, rehearsals of six, seven, and eight weeks were not uncommon. But the more spectacular revues and musical comedies were the greatest offenders.

There is the case of one revue which rehearsed for sixteen weeks. This was an exceptionally long period, but a well-known manager cites another instance in which the rehearsals stretched through thirteen weeks. Indeed, it is safe to say that, prior to the strike of 1919, few of the elaborate musical shows were put on with less than ten weeks of rehearsal. A specific instance of the economic hardship sometimes caused by long rehearsals may be given. A musical comedy which was rehearsed for nine weeks opened in a town in New York State, and closed after playing three nights. Members of this company received one half-week's salary for nine and one-half weeks of work. Today all of these players would be paid full salary after the fifth week of rehearsal, except the chorus people, whose salaries would begin after the fourth week. What now happens in actual practice, with rare exceptions, is that producers find it possible to rehearse their companies within the free rehearsal period stipulated by the contract.

9. *The Prevention of "Strandings."* The cartoon that pictured the theatrical troupe walking the railway ties was doubtless an exaggeration, but there was in it that germ of truth that goes with true caricature. Tho the more responsible managers have always undertaken to bring their companies back to the point of opening, there have been those who felt free to close a production far from the starting point; and yet others who have involuntarily stranded their companies through lack of funds. It is the testimony of both managers and actors that strandings in the past were of frequent occurrence, and that they often entailed real suffering. At present there is no such thing as strandings in the old-time sense. Every Equity contract calls for the return of the actor to the point of opening. Moreover, managers whose financial rating is doubtful or worse are required to give

bond for an amount sufficient to pay two weeks' salary for all members of the company, and return fares from the farthest point of the proposed tour. Under these conditions, when strandings occur (as strandings will in so risky a business as theatrical production), funds are immediately telegraphed and the actors are brought home, where their services are marketable. Equity then proceeds to collect from the manager of the stranded company, through forfeiture of the bond or otherwise.

10. *Payment for Costumes.* Up to 1919, it was the custom for performers to furnish, at their own expense, complete costumes for modern plays, and for "period" or "costume" productions many items such as hats, gloves, shoes, stockings, and wigs. Changes have been wrought in this respect, also. A male actor is now required to supply conventional morning, afternoon, and evening clothes, but nothing more; while the entire stage wardrobe of the woman actor is paid for by the manager. This difference in treatment is readily explained: Men's clothes are relatively inexpensive, and the styles change but slightly. But the costumes of the actress are ofttimes very costly, and their usefulness is affected by swift changes in fashion. Hence the provision relating to payment for costumes is one of particularly great importance to women actors.

The Equity Minimum Contract is distinctly a *minimum* contract. Any performer who is able to make better terms, by reason of special bargaining power, is perfectly free to do so. An actor may specify, for example, that he is to be featured in all newspaper and billboard advertising, that his name is to appear in electric lights at the theatre entrance, or that he is to have a private car while on tour. He is at liberty also

to secure the highest salary that his ability can demand, for the Actors' Equity Association has nothing to do with wage rates. Contracts are not reviewed by Equity officials, unless their advice is asked, nor are they registered in any way. The renumeration which an actor receives remains, therefore, his own private affair, unless he or his manager chooses to make it public. What the Association does is to specify the minimum working conditions under which its members may accept employment. No member is permitted to sign an agreement less favorable than the Equity Minimum Contract, for this instrument is believed to contain provisions equitable to both manager and actor, which cannot be reduced without peril to the individual actor and his fellow craftsmen. There may be occasional violations of this regulation, tho there would seem to be little point to such violation; for if an actor hoped, by striking out a required clause, to secure a part that might otherwise go to another performer, he could gain this advantage just as easily by making a salary concession, which would be entirely permissible.

III

When the Actors' Equity Association was organized, thirteen years ago, it directed its attention at once to the task which seemed most urgent — namely, to securing the adoption of a standard minimum contract which should be fair to manager and actor alike, and which, moreover, should be strictly enforced. How that contract came to pass is related in Section I of the present paper; and in Section II is a statement of the gains which it represents. That the actors have not been unreasonable will, it is believed, be apparent. Yet a few words further relative to the contract may not be amiss.

Two of its provisions relate to salary, and these may be compared with industrial practice. Full pay for all time worked, and additional pay for extra time, has long been a rule in the industrial world; but it should be noted that instead of the customary "time and a half for overtime," the actors ask only *pro rata* remuneration. The demand that managers provide stage costumes and pay all transportation is made on the ground that these items are expenses of production, and the actor cannot rightly be asked to invest capital in an enterprise which yields him no dividends or profits. The use of arbitration in the settlement of industrial differences is plainly in line with enlightened business practice. The remaining conditions of employment may be grouped together, as having for their purpose the assurance of two weeks of warning, or less, before employment ceases. And since the actor invests in the production either four weeks, or five, of unpaid service, in the form of free rehearsals, this demand can scarcely be attacked as unreasonable. The fact is that, even among the former enemies of Equity, now that the fight is over, there can be found no genuine opposition to the working conditions summarized above. There is criticism of the methods by which these conditions were achieved, and especially of affiliation with the American Federation of Labor and the introduction of the Equity Shop policy. But the fairness of the personal working relations which Equity has set up is attested by the managers themselves, upon whom, if upon anyone, these conditions would work a hardship. Arthur Hammerstein, President of the Managers' Protective Association, is so frank as to say: "The actor has won nothing that he does not deserve, and the manager has lost nothing that he should have retained."

Indeed, it is claimed by Equity and admitted by

many producers that the activities of the actors' union have brought definite benefits to the managers. It is said, first of all, that the present contract wipes out an advantage once held by the unprincipled manager who lightened his expenses of production by passing them on, in part, to members of his cast. Since the provisions secured by Equity bear directly upon production costs, or business risks, their observance throughout the trade places the producers on a more nearly equal footing, and relieves the scrupulous manager of an undeserved handicap. A second advantage comes through the disciplinary power of the Association. Equity stands for inviolability of contract, and enforces what it calls "two-edged equity," that is, the fulfillment of contract conditions by manager and actor alike. The penalties for contract-breaking are substantial. The offending manager is denied the use of Equity casts; and the unruly actor is censured, suspended, or expelled, at the discretion of the Equity Council. Breach of contract by actors is confined almost entirely to contract-jumping. Now that it involves a forfeiture of two weeks' salary to the manager, the practice is not nearly so common as in pre-Equity days. Equity goes a step further, and guarantees the payment of this penalty; if the actor cannot be induced to pay, the claim is met by the Association, and the recalcitrant player is expelled from his union.

But the disciplinary power of Equity is not limited to violations of contract. "If an actor's conduct is judged by the Council of the A. E. A. to be unethical, he may be summarily suspended," reads the Equity handbook. A recent instance of unethical conduct, cited by a manager, may be given. The manager had in one company an actor, a very fine comedian, who was given to strong drink. Now intoxication in the theatre is a serious of-

fense, and is punishable by instant dismissal. But the manager wished, not to discharge the performer, but to keep him sober. He laid the matter before the Equity officials, and an Equity committee waited upon the actor and explained that he must give up drinking or quit the stage. He chose the stage, and, two months later, when the incident was related, he was still strictly sober.

Finally, the use of arbitration in the settlement of individual claims represents a gain for the manager. Many claims of actors, which formerly would have reached the courts, are now dropped as worthless after being discussed with Equity officials. There can be little doubt that in this way managers have been saved much annoyance and not a little expense. Moreover, the managers may now press claims against actors without resorting to court procedure, since the contract has set up an agency for the equitable adjustment of differences. Even more important, perhaps, is the fact that he now deals with a responsible organization, members of which are pledged to abide by its decisions. And in no matter has Equity been more strict than in its insistence upon the prompt payment of arbiters' awards.

It is beyond the scope of the present paper to attempt to forecast the future effects of trade-unionism among actors. There is some contention that the Actors' Equity Association, tho thus far moderate in its claims, may be expected with each new gain in power to ask more and more of the managers. In view of this fear, which is occasionally expressed, it is but fair to state the Equity arguments against the probability that the Association will make extortionate demands in the future. The first of these is Equity's behavior in the past. It is good union policy, no doubt, to practise moderation while a strong union is being established, in the

hope that present self-denial will have its reward when conditions are ripe for action. But there is reason to believe that Equity was sufficiently strong, in 1924, to have secured far greater concessions than were asked. The published statement of a prominent manager, Mr. A. H. Woods, is to the point:

> And now, with the stagehands' and musicians' unions allied with them, it would have been so easy a matter for the Equity to have all but ruined every manager who had more at stake than excited speeches and hot air principles. It is to their credit that they were willing to effect a settlement that is as protective to the managers as it is to them.

This failure of Equity to make full use of its power may be an earnest for the future, but it cannot be construed as a definite guaranty. More positive indications of future moderation are to be found in the four clauses of the 1924 Basic Agreement, through which Equity voluntarily bound itself in several respects. The Association agreed, for a period of twenty-five years, (1) not to refuse membership to any person of good character and of sufficient age to be allowed legally to be an actor; (2) not to raise the initiation fee, except by consent of the Managers' Protective Association; (3) not to interfere with the text, or directing of any play; and (4) not to compel or suggest "the salary or pay which any actor may request or demand of any producer." There remain, of course, several ways in which the union might seek further advantages. It might, for example, demand an assured season of greater length than the two weeks now guaranteed; or, again, it might attempt to shorten or eliminate entirely the period of free rehearsals. But few managers appear to believe that such extreme demands will be made. They state, in this connection, that the average actor knows a good deal about the difficulties that confront the producer; that

he desires a wide market for his talent; and that he is, therefore, unlikely to make conditions so burdensome as to exclude from the field producers with small capital. It is, of course, no secret that the Shuberts, the Frohmans, David Belasco, and other prominent managers, entered the producing field with limited resources.

Nothing can be said with definite assurance of the future developments of Equity policy. Trade-union attitudes are so much a matter of leadership that changes in the personnel of the officers or Council might have results that would affect the theatre powerfully for good or for evil. But Equity policy thus far, it seems safe to say, has been in fairly close conformity with the admonition of Marcus Aurelius quoted in the Equity handbook:

> Love the art, poor as it may be, which thou hast learned, and be content with it; making thyself neither the tyrant nor the slave of any man.

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REVIEWS

RECENT TEXTS ON THE PRINCIPLES OF ECONOMICS AND THE NEW ECONOMICS: FAIRCHILD, BYE, EDIE, BOUCKE, TUGWELL

THE appearance of five general or introductory treatises on economics [1] within the past two years is significant for two reasons. In the first place, it shows that there is a continued widespread interest in the improvement of the elementary course, which is, in many respects, the most important instruction in economics given in the undergraduate curriculum. For a large number of students it is the only formal instruction received in the subject, and the success with which it is taught often determines the interest and performance of those who pursue more advanced work. Hence it is desirable that the products of experimentation with different types of course in the various colleges should find their way into the hands of the largest possible number of teachers. All the books here reviewed except Professor Boucke's are designed for use in the elementary course, and three of them [2] make rather wide departures from the treatment of the principles found in standard texts. In the second place, since texts for

1. Principles of Economics, by O. Fred Boucke. New York, The Macmillan Company, 1925. Vol. i, pp. xii, 565; vol. ii, pp. x, 520.

Principles of Economics, by Raymond T. Bye. New York, Alfred A. Knopf, 1924; pp. vi, 508.

Economics: Principles and Problems, by Lionel D. Edie. New York, Thomas Y. Crowell Company, 1926; pp. xx, 799.

Elementary Economics, by Fred Rogers Fairchild, Edgar Stevenson Furniss, and Norman Sydney Buck. New York, The Macmillan Company, 1926. Vol. i, pp. xviii, 568; vol. ii, pp. xiii, 661.

American Economic Life and the Means of Its Improvement, by Rexford Guy Tugwell, Thomas Munro, and Roy E. Stryker. New York, Harcourt, Brace and Company, 1925; pp. xiv, 633.

2. Those by Professors Boucke, Edie, and Tugwell, Munro and Stryker.

the general course are, by common consent, summaries of doctrine, they should show the net effect of criticisms and monographic research upon the fundamentals of the subject.

The contents of the recent criticisms of traditional economics are, of course, known to readers of this journal. It will suffice to mention them briefly. During the past century traditional theorizing became, it is said, largely a body of abstract reasoning concerning the reactions of man to his environment. As a system of logical deductions it was unassailable. But its assumptions were not sufficiently in agreement with reality to make these deductions useful as guides for public policy, for scientific study of special problems, or for the conduct of business. More specifically, the hypothesis of rational, calculating conduct on the part of the consumer, the laborer, and the saver is said to be largely a myth. The doctrine of utility and disutility as determinants of individual choices is attacked as contrary to modern psychology. On the positive side, the critics have urged economists to regard man's economic behavior as largely subject to modification in response to education and changing institutions; to study facts, quantitatively where possible, in order to ascertain how men *do* act, instead of deducing from psychological assumptions how they ought to act; and, finally, to abjure "pure" economics and concern themselves with the discovery of how human welfare may be promoted.

The present writer is not here concerned with the justification or refutation of these criticisms. It is his purpose to show how the authors of these texts have modified the traditional statement of the principles in answer to the criticisms, and to give an estimate of the suitability of their books for instruction in the courses for which they are intended.

The two-volume work by Professors Fairchild, Furniss, and Buck is an excellent introductory text. The proportion of space allotted to the various topics is well balanced, and the arrangement of subject matter and the argument are logical. The book is comprehensive in scope, covering every phase of economics that could reasonably be included in a full year's

course. The exposition is clear and the illustrations attractive and fresh. There is, however, a tendency to over-simplify and over-illustrate. It scarcely seems necessary to print two illustrations of the personal check in order to explain its nature to the average student.

The description of the industrial revolution, in the introductory sections, is an improvement over the dry, enumerative record found in many texts. Emphasis falls on the revolution in the textile industry, but the preceding and accompanying changes in transportation, agriculture, and the production of iron and coal are likewise described in relation to the general upheaval of industry that took place during the period. The hardships suffered by labor in consequence of the introduction of the factory system are admitted. But it is also made clear that workers were not free from grinding toil under the system of production that preceded it. The result of the revolution has been more income for all and greater freedom of life. Concerning the effects of specialization of work in the modern factory the authors take the position that the drawbacks to labor in the form of monotony, lessened demand for skill, and immobility are easily exaggerated, and that gains greatly exceed losses (vol. I, ch. 5).

Turning to the theory of value, we find the emphasis on market rather than normal price. The relations of demand and supply are carefully explained and illustrated. Very little is said, however, about the factors that determine the reservation prices at which sellers hold their wares. It seems hardly sufficient to rely on an appeal to common experience to prove that the volume of goods which the sellers will offer varies directly with the prices obtainable in the market (vol. I, pp. 241–246). The relation of cost to normal price has been considerably condensed, and the same tendency may be noted in Professor Edie's book. In neither of these texts is the interplay of competitive demands for the factors of production given more than a brief consideration. Increasing, constant, and decreasing cost are not explained at length. According to Professor Fairchild and his collaborators de-

creasing cost is dependent on the economies which accompany an increase in the size of the individual plant and take place within the plant (vol. I, p. 328). When decreasing cost prevails in an industry, no equilibrium of cost and price is possible, since any firm can reduce its unit expense by expanding its output. Hence, either cut-throat competition or combination may result. It is evident that the possibility of decreasing cost due to external economies is left out of account in this explanation.

The theory of distribution is that of the marginal productivity of the functional factors. Wages are governed by the discounted marginal productivity of labor. The supply of capital is explained according to the general theory of time preference. The common aspects of agricultural, urban, and mine rents are emphasized. Mine royalties, it is argued, do not differ from any other sort of rent. Neither the speculative nature of mining operations nor the exhaustibility of mineral deposits furnishes any reason for an exception (vol. II, pp. 146, 147). On the controverted question of the relation of the rate of interest to the volume of savings, the authors incline to the view that much of the surplus of corporations, life insurance reserves, and even a considerable part of the individual accumulations of the middle class are not affected by the rate of interest (vol. II, pp. 174–176). When the marginal analysis is applied to concrete problems of labor, many modifications are found to be necessary. Extreme specialization of work, bargaining power, and other disturbing factors cause wages to diverge from the productivity level.

The effects of the criticism of traditional economics are in evidence in this book. The institutional control of economic life is recognized in the chapters on the functions of government, on public finance, and on labor problems. Social institutions, in the wider sense of the term, are given as the fundamental cause of inequalities of income (vol. II, p. 293). The present social and economic order is not held to be above criticism, but freedom of enterprise, private property, and the regulation of production by the competitive price system are defended as the best means yet discovered for insuring pro-

duction (vol. I, p. 205). On the other hand, the need for conscious adaptation of institutions to changing conditions is conceded in many places. The relation of utility to consumers' demand and the marginal analysis appear in the usual forms. Men are generally assumed to act rationally, and in the case of consumers' choices rationality is explicitly defended (vol. I, p. 311). In comparison with Edie, very sparing use is made of statistical tables and other masses of data.

Professor Bye's position on the criticism of orthodox economics is well known. In another place [3] he has indicated his adherence to the revised statements of the neo-classicals. Here he sets as his aim the writing of an elementary treatise on pure economics. Applications of theory to problems of social policy are reserved for another volume. The study of pure economics, we are told, should precede the study of its applications. This is probably true. But the entire body of theory need not be taught before current problems or applications relating to earlier parts of the treatment can be given. Too great an avoidance of current problems is likely to make the exposition of the principles seem unduly arid and abstract. The present treatise is limited to the subjects of production, exchange, value, and distribution, with the exception of short discussions of the driving forces of economic life and of consumption. The chapters on production and exchange are, despite the brevity of treatment, very capably done, particularly those on labor as a factor in production and on risk in industry.

The theory of value is not unusual except for the author's objection to the law of demand and supply. On this point he observes: "To say that values are determined by demand and supply, when it can be shown that demand and supply are determined by values, is to reason in a circle" (p. 291). Altho the effects of bids by buyers and offers by sellers upon price are recognized, the supply schedule and the short-time equilibrium of the opposing forces of the two sides of the mar-

3. See his paper on "Some Recent Developments of Economic Theory," in The Trend of Economics.

ket are omitted. He appears to believe that the supply schedule is derived from demand, which is true only in part. His interest centers on the forces of demand in the case of market price, and on cost in the case of normal price. Normal supplies of all commodities are limited by real costs and by natural scarcity; particular goods are limited by opportunity cost. The analysis of normal price is lucid and better developed than in any of the other texts.

From value one passes directly to distribution, and the relation between the two is kept constantly before the reader. The returns to labor and to capital are marginally determined, the latter being defined to include land.

Interest is governed by time preference. Throughout the discussion there is recognition of the diversity of wages, rents, and even interest rates. Pure profits arise because of uncertainty and lack of perfect competition, and the entrepreneur is said to receive them because he acts as a buffer for the industrial system. In assuming risk he takes his chances on making either loss or gain. Yet the expectation of some pure profit is necessary to induce him to assume this risk.

The economic man and the rational consumer are defended as useful concepts, but not as complete pictures of human beings in the actual world (pp. 64, 480). Importance is conceded to multiplicity of motives and to habits. All this is made plain in the special chapters where these matters are considered (chs. 4, 22), but in the remainder of the book rational choice and economic motivation appear to be tacitly assumed.

The book is almost entirely conventional, as it was intended to be. Economics, as here expounded, *seems* relatively simple — too simple, in fact, to challenge sharply the mind of the student. The text has, on the other hand, many good points: the style is direct; the reasoning is clear and consistent, and the arrangement and proportion of subject-matter admirable.

Professor Edie is critical of the traditional statement of principles, but at the same time he regards it as the founda-

tion upon which the newer developments must be built. Hence he has attempted an integration of neo-classical economics with the newer developments (p. vii). The product of this reconciliation depends, of course, upon what are conceived to be the developments calling for a restatement of the older theories, what portions of the latter are deemed worthy of retention, and how the two are combined.

The newer developments are conveniently summarized in the preface. They are largely matters of emphasis. It can scarcely be contended, for example, that the neo-classicals neglected to read a descriptive content into their theories, to supplement their deductions with factual studies, to admit the tentative nature of their generalizations and the constant need for modification, or to recognize the effect of changing institutions upon economics. What the author probably means is that they did not go far enough in these directions.

The "money economy" is supposed to be an innovation. But practically all that comes of it is emphasis on the fact, generally recognized in texts, tho not greatly stressed, that business sets as its goal the maximation of profit, and not the largest volume of goods, and that production for the market involves many hazards and many opportunities for unearned gains. Attached to this doctrine are, however, two very doubtful novelties. Money is said to be an auxiliary factor of production (p. 65), and the capitalized value of earning capacity (going-concern value), as well as money, ranks with capital goods as a supply in the loan market (p. 255). Acquisitive capital takes its place along with physical goods as a productive factor.

Of much more importance is the author's rejection of the concept of the long-run equilibrium between the forces of demand and supply in his discussion of value and distribution. This results in a nearly complete suppression of the theory of normal value, and in the elimination of general laws of wages, rent, and interest. Conditions are constantly changing, and new forces are always at work to negative the tendency toward an equilibrium. "The most normal condition surrounding us is repeated change, not static rest." And, "our center

of attention is dynamic change, not perfect equilibrium" (p. 162). Sales do not necessarily fall off when prices rise, or rise when prices fall: changing income, installment buying, and seasonal and other fluctuations interfere with the nice adjustment of demand and supply. Interest does not settle toward an equilibrium point between demand as determined by marginal productivity and supply as fixed by marginal disinclination to save; these two merely set the upper and lower limits of fluctuations in the interest rate (p. 266). The productivity theory of rent is scrapped, and in its place appears a simple demand and supply concept (ch. 17). Marginal value-productivity (pecuniary) of labor for individual employers determines the wages of labor within competing groups, but as a general statement it is of little assistance in solving actual wage problems. Indeed, all the pertinent facts in any wage settlement cannot be forced within the boundaries of any single law of wages. The factors affecting actual wages are too numerous, and their effects are likely to be different with each new circumstance (p. 386).

If the usual theory of normal distribution is to be discarded, it remains to show how actual wages, rents, and interest rates are governed. For rent we are given only the formula that scarcity and the prospect of income somehow fix a market rate (p. 313). There follow, however, two interesting chapters on agricultural problems, in which statistical and other factual materials are used effectively. Wages are determined by many influences, all of which play upon the marginal productivity of the laborer in a particular employment. The marginal laborer is defined as either the least willing or least efficient worker, and the principle of diminishing productivity is applied both to gradations in personal ability and to diminished efficiency due to increasing supply of labor (pp. 354, 355). The relation of wages to relative supplies of the other factors is noted, but immediately the discussion digresses to a criticism of the theory of specific productivity (p. 358). There are several interest rates and four aspects of the supply of capital. The latter may be regarded as physical means of production, waiting, money,

or property values. Demand may also be looked upon from the same four points of view (p. 255). The principles of distribution amount, therefore, to little more than an enumeration of the forces which the author believes affect the rates of rent, wages, and interest. And altho these forces are briefly explained, as a rule they are not woven together into a consistent body of doctrine. Explanations remain pluralistic throughout. The result is disintegration, not integration. The principles of money and credit, banking, foreign exchange, and business cycles do not suffer the same disarticulation. The usual statements appear. But, in the case of business cycles the author's fondness for showing the confused state of economics asserts itself, as on many other occasions, and we are given in tabloid form eight varieties of theory to account for the ebb and flow of business prosperity (pp. 603–605).

The problem chapters contain a great deal of informative material, chiefly in the forms of statistical series and charts. They present facts about current problems, such as the agricultural depression following 1920, and others of more permanent interest, such as the trends of real wages, the growth of capital, and the movement of interest rates, prices, etc. The explanation of these data is usually in very general terms. In the case of wage movements we are informed that marginal productivity, which depends on scarcity of labor within the particular industrial group in relation to the utility of its product, rather than abstract principles of justice, governs the variations of wages under a money régime. The great augmentation of the total productivity of the nation during the past quarter of a century has, it is asserted, been accompanied by a decline in real wages; hence a larger product does not necessarily mean higher wages. This conclusion is based on P. H. Douglas's earlier figures,[4] which scarcely justify the statement that "Laissez-faire does not enable the

4. American Economic Review, XI. More recent calculations by Professor Douglas indicate that real wages of industrial workers actually rose from 1918 to 1924 and that there was no marked decline during the period 1890–1918. Ibid., XVI, Supplement, p. 36.

worker to exact his proportionate share of increases in productivity" (p. 368). For the years 1820–90, as the data cited from A. H. Hansen's index show, the trend of real wages was definitely upward.[5] Despite the asserted disparity of production and real wages, twenty pages later, when the make-work fallacy is under consideration, the statement is made that, "in the long run maximum national production is the hope of the worker"; and still later (p. 400), when the general subject of methods of raising wages is taken up, there appears the conclusion that "the main possibility of marked progress in labor incomes lies in increased total production rather than in whittling away the shares now going to capital." But there is no necessary inconsistency in the argument, for the realization of this possibility rests on a reorganization of the institutional factors that relate to labor. What direction this reorganization should take we are not precisely informed in Chapter 21, where the problem is discussed at length, except that control of immigration and population growth are necessary and that an increase in free income through taxation may be of assistance. It is evident, of course, that control of the supply of the working population through restriction of immigration or any other method does not affect materially the ability of the worker to obtain his full marginal product.

Furthermore, the significance of institutional changes is considerably modified when we come to the discussion of the causes of inequalities of wealth and income. Here we find that differences in natural ability are given at least as much weight as institutions and other purely environmental factors. In fact, the conclusions on this point lay less stress on institutions than do Professors Fairchild, Furniss and Buck.

As an introductory text the book has many serious defects: the principles are not clearly stated, and the theory of equilibrium, on which that of dynamic change rests, is given so briefly that many of the criticisms directed against it, as well as modifications for the sake of bringing theory nearer to actuality, will hardly be understood by the student. In the problem chapters some of the tables seem merely informa-

5. Ibid., XV.

tional, as, for example, the estimates of the percentage of the national income spent for various commodities (p. 81), the rediscount rates of foreign banks for a single month (p. 280), the average *ad valorem* rates of the tariff by schedules (p. 728), — especially since the text is on the tariff as a source of revenue, — and the diagram of "supply in the automobile industry" (p. 154), which is not "supply" as previously defined, but data of annual production, carry-over and abandonment of old cars. The statement of the fundamentals of price and distribution is not convincing, and the reader may well doubt whether there are any general laws of cause and effect worth considering. There are too many citations of contradictory theories and too much criticism on the author's part of the generalizations he has previously set forth. If the theory of normal value is of slight consequence, for example, why put it into the book?

The chapters on subjects other than value and distribution do not exhibit these defects. The introductory sections on the historical background of industrial society and on production are excellent. Moreover, the author has brought together a vast array of facts from which any student may learn much. The problem chapters usually contain valuable material for class use, and while not always very closely related to the preceding statement of abstract theory, they will stimulate the student to independent thinking and furnish him with some useful examples of the method of current economic investigations. A reworking of the material with a view to stating more fully the principles which the author could endorse without so much adverse criticism, and to eliminating some of the less important tables, would not only improve the teachability of the text but would bring forth greater consistency.

Of the three books which attempt a considerable revision either of the principles of economics or of the subject matter of the elementary course, Professor Boucke's is the most elaborate. In an earlier work [6] he has condemned the ac-

6. A Critique of Economics.

cepted belief in the universality of quantitative economic laws, the attempt to derive laws of price from human nature, the current theories of imputation, and the complete identification of income-shares with prices. In these later volumes he has presented an economic interpretation of life, in place of the worn-out doctrines of the marginists. The result is a work in many respects similar to, and in others quite different from, standard treatises. Major differences arise from his insistence upon the plurality of conditions that sway man's economic behavior, his rejection of the idea of definite quantitative relations between demand and supply, and his constant attempt to push the explanation of economic phenomena back to biologic and physical causes. The "economic interpretation of life" does not mean a materialistic interpretation. Rather the author strives to show how man's economic activities are conditioned by his physical environment, his innate physical and psychological traits, and by social institutions.

The analysis of production, especially that part touching proportionality and the causes of varying efficiency of labor and enterprise, contains much that is suggestive and thoughtful; tho the attempt to find the ultimate savings accompanying an increase in the size of a business in economy of space (vol. I, p. 156) is open to question. There are three laws of productivity, namely, proportionality, size and rhythm. The last is introduced as an explanation of the ups and downs of labor's output during a period of time, of fluctuation in business activity, and as one of the reasons for the irregularity of economic progress. Proximately, rhythm is referable to the metabolic processes of life; ultimately, perhaps, to such cosmic facts as the alternation of day and night, and the succession of the seasons (vol. I, p. 174). Discussions such as this, and the chapters on "Wealth and Virtue" or "The Personal Equation," lead far from the recognized boundaries of economics into the domains of other sciences.

The treatment of value and distribution is not satisfactory. Those portions of the chapters on price which deal with the psychological forces back of demand and with the manipu-

lation of supply by dealers are excellent, but the general analysis of price is indefinite and inconclusive. This is to be attributed to the author's diffuse style, his bent toward sociological explanations, and his avoidance of quantitative concepts. The relation of cost of production to price is given in terms of entrepreneurs' expenses. In the short run prices tend to agree, it is asserted, with the costs of the least efficient producer (vol. I, p. 534), but in the long run with the expenses of the most efficient. This is correct as a general statement, but it overlooks the fact stressed by Marshall and amply demonstrated by others, that in most lines of business there exists an unsuccessful fringe of entrepreneurs whose costs are likely to be above the selling price that rules in the market. Nor is it true that price will agree with the costs of the more efficient in the long run if the expense differentials are the results of differences in the personal abilities of the managers of different firms. The principle of diminishing return applies to management as well as other factors of production.

In his treatment of the theory of distribution, the author, having rejected marginal productivity, has recourse to the general formula of demand and supply. All conditions that bear upon the scarcity of the factors and upon their uses must be taken into account. But precisely how these operate to bring about a given wage, rent, or interest rate is not made clear. Here again distracting and imponderable forces are emphasized. Wages, for example, are affected not only by the productivity of the laborer but by his social status, by personality, by nepotism and by many other circumstances (vol. II, pp. 127–133). A quotation from the concluding section of the chapter on profits is also illustrative of the tendency to resort to a multiplicity of causes.

> In fine, profits are either wages of management as such, or more likely a mixture of these with aleatory gains which cannot be explained by anything else than the instability of human thoughts, emotions, policies, wants and methods of work. There is always a chance for gambling. Enterprisers are essentially buccaneers who pounce upon opportunities for quick returns, who blaze tracks in a wilderness of business relations, who risk much for the love of adventure and for the hope that pelf and power will be theirs (vol. ii, p. 174).

The effects of institutions and of social control naturally come in for consideration. It is proper that they should, but the important question is not sufficiently examined, whether innate human traits and the fundamental conditions of scarcity of goods are the foundations of these institutions, or whether the latter are independent factors. In the chapter on the personal distribution of incomes scarcely any use is made of the large amount of valuable statistical information now available on the subject. The significance and accuracy of income data are doubted. On the other hand, space is used to make such minor points as the fact that one person may receive income from all the functional shares, that these shares are not always separable in practice, and that people receive a good deal of income for which no price is paid. Inequalities are explained by inheritance, by social environment, and by variations in natural ability. But inborn differences between men are always decisive, and governmental changes and the legal setting of economic activities affect the distribution of wealth but little (vol. II, pp. 189, 190).

The concluding twelve chapters deal with the growth of wealth, business cycles, changes in price levels and their social effects, and the problem of population. Economic progress is well analyzed in terms of the cumulation of cultural advances, technological improvements, financial organization, thrift, and the control of population. Precisely why business cycles should be injected into the midst of a section that is otherwise concerned with long-time changes and permanent forces is not evident.

It is usual for an advanced treatise to deal with important controverted questions and to bring before the reader the conflicts of opinion and analysis presented by different writers. Possibly Professor Boucke believes that in his earlier works he has sufficiently considered such matters. At any rate, they are absent from his most recent treatise.

The book is, on the whole, disappointing. It is too diffuse, and it lacks sharpness of analysis and definiteness of conclusions. Originality and suggestiveness are displayed in spots, but so far as the reviewer can discover, there are no major contributions.

American Economic Life, by Professors Tugwell, Munro, and Stryker, was written for use in the freshman course in Contemporary Civilization given in Columbia College, and not primarily as an introductory text in economics. It is suggested in the preface, however, that the book may be welcomed by teachers who desire to escape the dry and abstract exposition of the principles usually given in the beginning course. Moreover, the latter half of the book deals with the distribution of wealth and income; and other portions touch lightly on different phases of economics. The primary objective is to picture living conditions in the United States and to suggest the means for their improvement. It seeks to show, in the first place, that a great majority of the people have not sufficient income to afford a comfortable existence (on page 593 it is stated that "eighty-six per cent of our people still live in poverty"), and that this condition might be overcome would we but set our minds to the task of discovering and controlling the factors which govern production, the distribution of wealth and income, and the rational choice and use of goods.

The first and most important means of increasing welfare is rightly held to be augmented production. Here the exposition is largely descriptive of the technical methods of augmenting output and the barriers that stand in the way of maximum utilization of our resources. Waste, ignorance, lack of proper working environment, the money economy that causes business to withhold output for the sake of higher profits — these are the prime obstacles to a volume of national production that would put us all on the comfort level. Orthodox economists have long lamented the failure of improvements to wipe out poverty, but have commonly explained its persistence in terms of the growth of population and the law of diminishing returns. These seem not to be serious obstacles, or perhaps the authors suppress them because they lead to the "philosophy of despair."

The second means of increasing welfare is a just distribution of income, it being implied that the present apportionment stands condemned because of gross inequality. And

condemned it would be if distribution were determined, as we are told it is (ch. 22), by pull, luck, "institutionalized advantage," and bargaining strength. Even superior ability to produce is said to be fundamentally a matter of chance. Just what should be the aims and methods of reapportionment is admitted to be incapable of exact statement. It is shown, however, that there are tendencies toward the modification of competitive distribution under the régime of private property by increasing the bargaining power of the weak, by giving greater care to the incompetent and more nearly equal opportunity to all, and by providing further governmental regulation of business. Schemes for a general reorganization of industrial society, such as the various socialisms and coöperation, receive very little support. With human behavior and beliefs as they now are, the difficulties outweigh the favorable possibilities. Yet cautious experimentation with minor modifications is approved. A third means of augmenting welfare is the more rational choice of goods and more rational use of those chosen. Rationality means very little more than calculated conduct, and while certain general canons — variety and harmony — are set up, the discussion runs mostly to illustrations and common-sense comment on the use of budgets and the like. These chapters contain much sound, practical advice.

The book ends with a buoyantly optimistic portrayal of the reign of prosperity that awaits us if we will only abandon the philosophy of despair and adopt a forward-looking, hopeful attitude toward the problems of economic life.

From such a book the student will learn many facts about methods of farm and factory production, something about the organization of business (in terms of the money economy), and something about living conditions, which are vividly presented with the aid of the photographer and the modern novelist. He will understand that the civilization in which he lives, in spite of its much-lauded efficiency, falls short of the maximum product that might be obtained. He will probably carry away some rather superficial notions concerning price and distribution. Possibly he will become interested in the study of economics.

It is evident that there is considerable diversity of opinion at the present time as to the purpose and the proper content of the general (usually the elementary) course in economics. Professor Bye adheres to the neo-classical tradition. Professors Fairchild, Furniss, and Buck are similarly inclined, altho they make a number of minor modifications. Professor Edie, while conceding the soundness of the fundamental doctrines of the older economics, makes rather important changes in conformity with institutionalism, behaviorism, and his own interpretations of recent research in particular fields. On the whole, he regards the orthodox statements of the theories of value and distribution as largely useless for the solution of concrete problems. Like Professor Tugwell he is interested in demonstrating the possibility and desirability of controlling economic forces for the purpose of increasing welfare. Professor Boucke restates the principles, as has been shown, but he is not so much concerned with control as with scientific explanation.

Many of the doctrines of the neo-classicals have not been substantially modified in the new economics. Diminishing utility and diminishing return, the theory of the value of money, and the coincidence of entrepreneurs' expense with the long-run trend of price are still the foundation stones of economics. Professor Tugwell's book omits practically all of them, but he has not attempted a restatement of the principles.

There are, of course, certain similarities among the three books that depart from the orthodox theories. All extend the boundaries of traditional economics to take in problems and facts that have formerly been supposed to lie within the fields of morals, sociology, and psychology, or at least were supposed to lie there so far as an introductory course was concerned. All are inclined to minimize the application of general laws to a wide range of economic phenomena and to emphasize variability and dynamic change as characteristics of economic relations. This leads to greater complexity of explanation and less definite conclusions than in the older books. There can, of course, be no reasonable objection to the study

of the various methods of controlling business, consumption, or any other phase of economic relationships; and surely all the pertinent findings of other sciences should be brought to bear on such studies. But not all phases of these relationships can be included in the beginning course, and it is doubtful if the emphasis on dynamics leads, in the present state of knowledge of the subject, to conclusions of sufficiently wide significance to warrant their inclusion in the general principles.

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ANSIAUX, TRAITÉ D'ÉCONOMIE POLITIQUE[1]

PROFESSOR ANSIAUX'S big book, now completed, undertakes to cover systematically the whole field of economics. Its author professes himself an adherent of the sociological school of economists, and his repeated plea is for a consideration of other than purely economic facts and influences. Whatever value the book possesses lies in the broad viewpoint from which it was written; for its seventeen hundred and fifty pages contain remarkably little either of new or of newly ordered fact, of clean-cut analysis and systematic theorizing, or of fresh statement of familiar doctrine.

The first volume deals with the economic organization, following the traditional arrangement. It devotes unusual attention to what are ordinarily considered non-economic facts, containing chapters, for example, on the physio-psychological, the technical, and the juridical elements in production. It allots a good deal of space to the description of various classes of industries, and undertakes a "realistic" exposition; but there is no ordered and systematic presentation and exposition of facts, and the reader is left, not with a clear understanding of how production is organized to-day, but with a spotty impression of various matters concerning

1. Traité d'Économie Politique. Par Maurice Ansiaux. Paris: Marcel Giard & Cie. Vol. I, 1920; vol. II, 1923; vol. III, 1926. (Bibliothèque Internationale d'Économie Politique.)

production that have happened to interest the author. Chief among such matters is the concentration of enterprises, which Professor Ansiaux finds to be a general phenomenon. What does such a statement mean? Unhappily, like too many other "sociological" writers, our author does not tell us, nor does he back up his statement with adequate evidence. Concentration, we learn indeed, with the emphasis of italics, is "the increasing importance of undertakings or their more or less intimate union in one definite branch or in connected branches of economic activity" (I, 164). This probably means something, tho it is hard to tell just what; but there is little supporting evidence outside a few figures showing the increasing size of manufacturing and banking units. It is easy and tempting thus to set down occasional facts, to draw generalizations, and intersperse them with one's social views. Professor Ansiaux has yielded to this temptation.

The avowedly theoretical section of the work (volume II) is, if possible, even more unsatisfactory than the descriptive. It is unsystematic, confused, inadequate. Without a diagram or a mathematical formula to aid in the clear and definite statement of complex facts, it contains no clear-cut price theory, not even the conventional statement of the law of supply and demand. No use whatever is made of the modern studies showing the relations between actual changes in supply and in price. Instead, we get discussion of the importance of fixed price as a "social fact," of the characteristics of retail prices and of monopoly price (concerning the theory of which we learn almost nothing), and of the influence of speculation, with which our author is greatly impressed. The notion of value is comfortably dismissed in a chapter of ten pages.

Money is treated in the same hit-or-miss fashion. Prices depend, not on the quantity of money, but largely on psychological conditions, among which speculative influences play a large part. Others have thought so, too, but there is something to be said for examining and presenting at least a little of the rich statistical evidence. Can Irving Fisher be dismissed in a sentence because of the impossibility of measur-

ing satisfactorily variations in the value of money? Surely none better than Fisher himself has pointed out the difficulties of such measurement. Undoubtedly the value of money depends on what men think about it, but if we do not go beyond that statement we do not get very far. The reader will leave this section feeling that he has read a good many familiar statements about money without learning what determines its value.

Distribution is worse yet. Through a hundred and fifty pages the reader learns about variations in interest rates, the influence of banks (in encouraging speculation as well as saving), the effects of speculation on interest rates, and what not, but he never learns why interest is as high as it is. With interest thus satisfactorily disposed of, profit and rent between them are allotted a single chapter of twenty-five pages, while wages get a section six times as long. But tho we are told all sorts of things about wages, we do not learn what fixes them, unless one accepts as a satisfactory bit of theory the statement that the long-continued general rise of wages is due primarily to the profound general change in the mentality of the masses of the workers (II, 544). If we ask whether the state can actually raise wages by legislation, we get nothing more than a few practical observations on the legal minimum wage (II, 641). And what shall we say of a labor expert who puts down in cold blood the unqualified statement that the right of injunction has been abolished by the Clayton Act (II, 583), without a word about the ensuing court decisions and the uninterrupted flow of injunctions out of our courts?

In view of the practical experience of Professor Ansiaux, the reader turns with perhaps the highest expectations to his third volume, dealing with the general problems of economic life; but only to be disappointed. A superficial treatment of international trade, criticizing the classical economists yet offering no substitute for their reasoning, is followed by some inconclusive remarks about protection, of the "on the one hand this, on the other that" order — a type of discussion and exhortation, by the way, that runs through the whole

book. The section on economic crises would have been a respectable enough performance if written before the war. With one irrelevant exception, it refers to no book published since 1913, and it discloses not the slightest acquaintance with the immense body of fruitful work on the cycle done by American economists during the past decennium.

In his long discussion of paper money, Professor Ansiaux describes inflation as a device, and sometimes a necessary one, to substitute public for private consumption (III, 359). It has sometimes been called by harsher names. Our author stoutly maintains that the rôle of inflation in causing high prices and wages has been much exaggerated (III, 377), and he criticizes Cassel for neglecting the influence of speculation on price changes (III, 372). Of course, it is necessary to take account of other influences than the mere quantity of money, but it is not necessary to wear down the edges of one's thought in doing so; and in any case who, outside a madhouse, ever supposed the relation between the quantity of money and prices to be a purely mechanical mathematical one? From the standpoint of clear-cut thinking, Professor Ansiaux's theory, here as elsewhere, is sloppy, however broad it may be in taking account of "sociological" elements. He ends up, as was almost inevitable for a French or Belgian economist, with a plea for the devaluation of the franc and ensuing stabilization.

The book ends with three hundred pages on theories of economic reform, from the Manchester school at one extreme to the Bolsheviks at the other. St. Simon and Proudhon come in for unusually respectful attention, and the whole section, without displaying any particular theoretical muscle, contains a good many sensible, if not specially new, observations, all leading up to the desired conclusion that the path of progress is through state intervention of a fairly daring sort (see especially III, 661). Concerning this, there is really little to say except that Professor Ansiaux prefers this method and of course finds reasons for his preference; others have other preferences and other reasons. Why then make a parade of supposedly scientific criticism and proofs?

All in all, the work yields surprisingly little, either in added information or better ordering of existing knowledge, in fresh interpretation or in suggestive discussion. To wander over the whole field of economics and drop random observations here, there, and everywhere, is not to advance science and sound thinking. If this be the sociological orientation of economics for which our author pleads, many of us will be inclined to pray for a baptism of good old-fashioned narrowness.

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SOCIAL CONTROL OF BUSINESS [1]

THE writings of the present generation of economists have dealt, in the main, with minute phases of the complex world of business, specific problems of economic organization or business activity which are analyzed as isolated phenomena. That this method of attack has made for sound progress in economic science cannot be denied. It has made available a wealth of concrete data regarding our social environment, to serve as raw material for inductive reasoning and as a safeguard against easy academic generalization. Recently, however, a slowly increasing body of literature has shown that there are those prepared to undertake the more difficult task of constructing from these facts of detail a picture of our economic order in its entirety, disclosing the essentials of the institutional environment within which man's economic behavior exerts its effects. Students of social institutions who have followed this development in the literature of economics will recognize in this new book of Professor Clark's a timely and valuable contribution.

In approaching his subject from the standpoint of the control of economic activity, Professor Clark takes a broad view of the limits of his task. His concepts are defined so comprehensively as to include virtually the whole sphere of modern

1. Social Control of Business, by J. M. Clark, University of Chicago Press, 1926.

economic phenomena. Social control exists "whenever the individual is forced or persuaded to act in the interest of any group of which he is a member, rather than in his own personal interest" (p. 8). Since each of us today is born a member of an indefinite series of groups, large and small, loosely and closely compacted, no one is free from the possibility of such control. And since the social structure is but a network of understandings, customs, conventions, laws, which restrain and direct, in the interests of the group, the spontaneous activity of individuals, all of us are actually subject to social control in every department of our lives. By defining business as "the struggle for wealth" (p. 12), the author marks out for analysis the whole of that department of human activity which can be covered by the word economic. Business and control of business have not grown up separately in the relation of cause and effect, but have developed together, the one implying the other, so that both constitute in any age a vast and intricate institution. Given the technical equipment and scientific attainments of the age, the principal economic periods of social development are distinguished by the peculiar aims of control, the rules and procedures which develop to further these aims, and the resulting adjustments and adaptations of economic activity.

The book is concerned primarily with a study of contemporary society, tho its analysis of the modern business world is relieved by a brief but penetrating statement of the essential characteristics of preceding stages of economic development. The subject of control in modern society raises at once the familiar controversy of socialism versus individualism. Professor Clark takes cognizance of this controversy, presenting in one chapter[2] an admirably clear and impartial summary of opposing arguments. But this, the reader feels, is incidental to his chief task, which is to show how little there is of individual freedom and how much of social control even in a system customarily called individualistic. As a preliminary step in this inquiry, the essential nature of individualism is analyzed; here the author discloses the inadequacy of a

2. Chap. 3. "Business: Private Right or Public Interest."

social system founded on private rights alone to satisfy the needs of a complex society. No single volume would suffice for a thoro study of all forms of guidance and restraint to which the individual is subjected by the dominant *mores* of our social order. Professor Clark presents type studies of these controls, electing to examine those which have become most clearly crystallized and which are applied through established procedures. Six chapters of the book are devoted to a detailed study of the objectives and processes of our legal system; one each to a similar study of the extra-legal codes of ethics which abound in the business and professional world, and of the less formal but influential codes of the industrial wage-earners. These chapters are not descriptive merely, but profoundly analytical and interpretive. The same method of type study is employed in discussion of the practical problems arising from attempts to control economic life, and of the principles and mechanisms devised to solve these problems. Part Three of the book, comprising approximately a quarter of the whole, presents a thorogoing study of public utility and trust regulation. This section considered by itself is a worthy contribution to economic knowledge. The closing chapter, under the suggestive title, "If I Were Dictator," is a statement of the author's social philosophy applied to current problems of the employment market and in the fields of general business activity and international economic relations.

So broad is the scope of this book and so varied the problems upon which it touches, that few students of social phenomena will fail to find here matter pertinent to their special interests. The whole study gives testimony to the essential unity of all the social sciences. Indeed, quite apart from its illuminating treatment of concrete problems, the book is especially noteworthy for its disregard of the lines of division which doctrinaires have set up to separate into non-communicating compartments the inter-related spheres of economics, political science, sociology, law, ethics, psychology. Considered merely from the standpoint of his method of study, as indicating to the reader the breadth of vision ap-

propriate to the scope of economic inquiry, Professor Clark has contributed here to the education of his fellow economists.

The reviewer may, perhaps, be permitted to select for especial commendation those features of the book which touch most closely upon his own interests. He would mention particularly the section dealing with the function of law in society, and, in a more general way, the author's appreciation of the significance of the problems arising in the field of industrial relations, and of the importance of the organized labor movement when considered from the standpoint of societal evolution. With reference to the subject of law, it is certainly true that students of social science have long been handicapped by the lack of a treatise on legal institutions simple enough to be intelligible to the layman and, at the same time, sufficiently precise in its terminology and accurate of statement to serve as a guide through the mazes of legal technicality. Recent contributions by other writers have done much to satisfy this need; of these the writings of Freund, Pound, and Llewellyn among the jurists, and of Ely and Commons among the economists, deserve especial mention. But ample room has been left for the service rendered by Professor Clark in his treatment of this difficult subject. His grasp of the social function of legal institutions, his brilliant analysis of such basic rights and liberties as those of private property, contract, and personal freedom, his exposition of the essential character of competition, and his statement of the interplay of economic and legal forces are all of the highest order. As regards the subject of the labor problem it is the reviewer's opinion that no book has yet been written which adequately gauges the importance of the labor movement as an evolutionary force, and comprehends fully the social implications of the wage earner's reaction to his institutional environment. These problems are not a part of Professor Clark's main task. Yet his book is filled with suggestive comment upon them which may be expected to act as a stimulus and a guide to more comprehensive study by others.

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THE GRUNDRISS DER SOZIALÖKONOMIK [1]

THE *Grundriss der Sozialökonomik*, now in course of publication, has often been taken as a text to illustrate the change in the concept of economics by German scholars during the past generation. It is the successor of Schönberg's *Handbuch der Politischen Ökonomie*, which for many years held the field as the standard encyclopedic work on economics. The Handbuch had reached its fourth edition at the close of the last century, in a form substantially unaltered from that in which it first appeared. It was an admirable statement of the views of its time, and will always be treasured by those who studied its five big volumes. Good as it was for the nineteenth century, in the twentieth century it was considered so hopelessly antiquated that, when a new edition was under consideration, the leading German economists decided that the old Handbuch could not be used as a foundation on which to base a book suited to the knowledge and needs of the time, and combined to offer in place of it the present Grundriss.

The title of the new work is itself significant. In place of the traditional political economy, the body of abstract principles which, except for the introduction of the marginal analysis, had changed but little since the time of Smith and Ricardo, it discusses social economics. The title of the volume last issued indicates still more distinctly the departure from the economics of the past. It is the first part of a section devoted to "The social system of capitalism," and considers specifically "Social stratification in the period of capitalism." After an introductory chapter by Brinkmann on the history of capitalistic society, he and other authors discuss the aristocracy, the German peasantry, the middle class, and the industrial proletariat in the age of capitalism; Michels contributes

1. Grundriss der Sozialökonomik, Abteilung IX: Das soziale System des Kapitalismus. Teil 1: Die gesellschaftliche Schichtung im Kapitalismus. Mit Beiträgen von G. Albrecht, G. Briefs, C. Brinkmann, E. Lederer, J. Marschak, R. Michels, G. Neuhaus, L. Pesl. 1926. Pp. 515. J. C. B. Mohr (Paul Siebeck), Tübingen. M. 25; in subscription, 22.50.

a long chapter, making up nearly a quarter of the book, on the psychology of class movements against capitalism; and Neuhaus concludes the volume with chapters on occupational and social groups, and on the movement of population in the present period of capitalism.

The departure of the work from the method and contents of preceding works on economics, suggested by the titles above, can be illustrated under several different heads.

In the first place, it has a strong historical tinge. It is significant that Schmoller is the author most frequently cited throughout the work; his influence is everywhere observable. Following the summary of Briefs (p. 144), every period has its characteristic forms of organization, its own specific system of law, organization of production, social groupings. The institutions of the time determine the directions of men's interests and fix categories in which they think when they consciously reflect upon the economic phenomena of their time. The purpose of this volume, as indeed of the whole work, is not to provide an economic philosophy good for all times and places, but only to describe, and so far as may be explain, the conditions of the recent past (say roughly since 1800) in certain parts of Europe and of the western world. These conditions are in many respects irrational, in the sense that they are consequents of conditions in a preceding period; they are not the results of voluntary logic, but are remnants left in the course of an unconscious evolution. Everything is in flux, and nothing is intelligible except as it is related to the historical roots from which it sprang.

Just as men behave differently in different times and places, so in any one time and place they behave differently according to the positions which they occupy in their society. Economics can attain reality only in so far as it recognizes this fact. Social economics views men not as abstract beings subject only to the motives postulated in pure theory, but as members of different classes, distinguishable in their physical and their mental activities, the amount and character of their property, their mode of life, their conscious philosophy. In the age of capitalism the outstanding contrast is between

those who own the material equipment for production and the mass of the people, who, lacking property, must work for wages advanced by the capitalists. While the present volume analyzes, as indicated by the chapter headings, the economic position and the problems presented by other classes of contemporary society, it focuses attention upon the industrial proletariat, and presents an elaborate survey of the history, position, behavior, philosophy, and prospects of this class.

Another feature in which the work differs notably from its predecessors lies in its attention to the relations of economics and psychology. Again we see a determined attempt to get closer to reality, and, since the actions of men in getting a living are the prime concern of the economist, to discover how the men of different classes really do act and why they act as they do. The various authors of the work refer time and again to Manchesterism as the very limit below which a degraded economics could not sink. Their references to psychological literature are not numerous, if we except Michel's elaborate survey of the literature of social psychology in his bibliography, and they do not appear devoted to any particular schools of psychology; but as economists they are intent on men's creeds and motives, seeking to explain their economic behavior by reference to their economic and social position and the complex of ideas which comes to them by inheritance and by reflection. It is significant that many references are given to imaginative literature, novels and the like, as a means of approach to the psychology of the laboring class which is worth serious consideration.

A paragraph in the chapter discussing the concept of the proletariat (p. 153) is symptomatic of the new method. We must distinguish a succession of three concepts. Historically the proletariat first appears as a number of proletarian beings. The concept broadens to one "really social-economic" when the conditions determining a proletariat develop to a large extent from the structure and relations of capitalist society; the concept becomes "psychological-ethical" when a large part of the proletariat becomes class-conscious.

There can be no question that the new point of view lends

to the work a concrete vitality which is lacking in the earlier and more abstract treatment of economics. The obvious difficulty is that the subject, as it approaches reality, departs from generality. The volume before us treats, not of social stratification in the period of capitalism in general, but of the forms which it has assumed in Germany in particular. Some comparative material is presented, it is true, illustrating conditions in England and France, and there are occasional references to other European countries and to the United States; but the bulk of the volume applies specifically to German conditions. It is well that this should be so; the authors have had enough to do without extending the field of their observations. The effect upon their work of the peculiar conditions attending the war and the *Zusammenbruch* which followed it is sometimes apparent, but is on the whole less serious than might be anticipated. Sober and careful, if sometimes rather labored, the work presents the characteristic features of good German scholarship, and is well worth the attention of American students. Particularly at this time, when a new encyclopedia of the social sciences is projected in this country, should the Grundriss be studied for the suggestions which it offers.

CLIVE DAY.

YALE UNIVERSITY.

CHASE'S TRAGEDY OF WASTE [1]

MR. STUART CHASE is not only a literary journalist who writes provocatively on social-economic affairs: he is also one of the pioneers who are supplying to some American labor organizations new types of professional services, such as engineering and accounting. He accepts with enthusiasm Thorstein Veblen's doctrine that our technicians already have sufficient skill to double — at least — the national productivity, if they were only organized for "making goods instead

1. The Tragedy of Waste, by Stuart Chase, in conjunction with The Labor Bureau, Inc. New York: Macmillan, 1925. Pp. 296.

of making money." In the book before us, a quasi-statistical estimate of various types of "economic waste" in the United States, Mr. Chase reaches the conclusion that, out of our able-bodied adult population of some forty millions, we have not less than eight millions who are producing illth, not real wealth; six millions needlessly idle on any average working day; and six millions working on superfluous tasks in the production and marketing of beneficial goods. More than half our man-power, therefore, is said to be wasted, besides those squandered natural resources like oil, which are estimated in value terms but not added to the losses of current man-power.

This general sort of indictment has been made fairly familiar to economists by the sources from which Mr. Chase draws his materials — socialists and other reformer-critics, and engineers like those, associated with Mr. Hoover, who issued the well-known report, *Waste in Industry*.[2] Nevertheless, the book here under review will be valued by many discriminating readers who are not emotionally or politically in sympathy with the author, because it assembles a mass of rather recently published materials, and presents its striking thesis in Mr. Chase's usual vigorous, colorful style.

The problems he encounters in attempting to demarcate and appraise this elusive element, waste, differ somewhat according as the inquiry concerns (1) the extent of harmful goods produced, or (2) the lost motion now involved in producing those goods which are left on his white-list. Let us begin with the first of these topics.

The chapters on illth, I imagine, will be commended more generally by economists than the others, if only because this subject has been less adequately treated by our order of philosophers than most of the remaining matters on which Mr. Chase touches. It seems to me also that Mr. Chase is usually on safer ground when dealing with illth. Controversial matter, of course, abounds here as elsewhere; for example, some two thirds of our military establishment is included, as well as "super-luxuries and their cheap imitations," "and, as a sort of god-father to them all — advertis-

2. New York: McGraw-Hill, 1921.

ing." Tobacco and light liquors, on the other hand, are not condemned. Thus, every reader is likely to find frequent occasion for protesting, both on the score of the categories employed, and of the statistical data assembled on them from motley sources. For instance, one little idea by which the author sets some store — namely, that legitimate differences of taste, about which there is no profitable disputing, probably affect not more than 10 per cent *by weight* of the whole physical output — seems to me to carry a rather specious suggestion that his ideal "Industrial General Staff" would have comparatively little difficulty in making up a year's budget in advance, of correct quantities of real wealth to satisfy its hundred million privates. Value-terms, of course, are of enormously greater significance in such matters than physical weight, as our author virtually concedes as he proceeds to argue that, among debatable items of final consumption, those which he condemns as illth absorb over one seventh of our total labor-power. On the whole, however, his contribution to our fragmentary literature which criticizes in quantitative terms the consumers' goods now produced is very welcome. I should say, at least, that it compares favorably with Hobson's writings on the subject.

Let us turn now from his critique of consumption to that of production, which attempts to appraise the larger wastes: unemployment, dissipated natural resources, futile efforts in advertising and marketing, inefficient internal administration of factories, and, above all, poor coördination among these units, resulting in excess plant-capacity among other evils. Here we find numerous clippings of estimates, or figures more exact, as to the amount of oil left in the ground by present drilling methods, numbers of men laid up by industrial accidents, the dollars and cents spent on advertising, the percentage of efficiency which engineers report finding in individual plants, and so on and so forth.

Naturally, detailed accuracy is not yet attainable by anyone for such an ambitious Domesday Book; but there are numerous types of "waste" recited here which make it clear that the author is not highly rigorous in distinguishing testi-

mony from facts, and also that he is often inclined to call any process wasteful which merely falls short of superhuman perfection.

Consider, first, some important cases of alleged waste which illustrate his reliance on insufficient evidence. Interregional trade, which involves making shoes in Massachusetts from Australian hides, is baldly scored as wasteful of transportation (p. 227), and numerous other illustrations are given in conjunction with this. They show that the author has not grasped the familiar and elementary economic criticisms of the fallacious argument that we necessarily waste our resources when we buy abroad things which we could produce at home. Again, in connection with the indictment of 90 per cent of advertising as waste, we find no serious consideration of the question whether the net cost of getting goods produced (including putting them into the hands of the final consumer, quality considered) has been lowered by advertising. He seems to fix his attention too exclusively on the growth of the labor directly employed in this new advertising industry, ignoring the possible release of labor thereby effected from other parts of the merchandizing system. Similar objections may be made to his frequent complaint that the increase of white-collared workers generally means a proportionate addition to the burdens which the brawny toilers have to bear.

An especially important controversial issue, on which only one side is represented in the book, concerns the testimony of engineers and millionaire entrepreneurs on the extent to which their industries could gain in efficiency by adopting the methods which the propagandists prescribe. (Mr. Chase, by the way, should add to his next edition a computation of wastes in agriculture, based on how much more it costs to run *all* farms now, than it would cost if all were run as the *best* farms are now run. The Department of Agriculture has published data along this line.) Such indictment of "waste in industry" doubtless has good effects in stimulating the poorer managers to learn better practices; and it is quite possible, also, that most economists still put their faith too exclusively in the automatic effects which competition is supposed to

have toward universalizing improvements as fast as they are really perfected by pioneers. To my mind, Mr. Chase is quite right in thinking that collective endeavors among engineers and within trades, such as Mr. Hoover has been promoting in many directions, are indispensable for realizing economies like those inherent in simplification. We all believe, of course, that productivity can be doubled and trebled in time by improved methods. But it is quite another thing to sift the claims of the missionaries of new proposals, to make sure that the methods they favor have really been so fully tested that nothing but outright stupidity and neglect retards their general adoption. In the field of vocational testing, for example (see pp. 163–164), it is clear that Mr. Chase does not distinguish carefully between methods which are now ripe for general adoption, and those which are still in the experimental stage. And so through the other arts; there would doubtless be no difficulty in finding competent technicians who would dispute the soundness of methods which would be universally prescribed by Mr. Chase and his authorities as minima.

Thus the accuracy with which our author locates waste is often subject to challenge in regard to matters of fact — technical or economic. Now consider a second and larger class of his "wastes" in production — those which also involve disputed matters of fact, but which are also earmarked by means of larger assumptions which are Utopian. Suppose we grant that all the technical methods favored by Mr. Chase are really superior to others now commonly used. Is not Utopia the only locality where all managers are to be considered *wasteful* who do not run their affairs as well as do the best managers of their time? Mr. Chase allows, it is true, that "figures like the above cannot, of course, be taken at their face value. Circumstances are too diverse, unique difficulties are too many, to expect industry generally to breast the performance of its best units" (p. 152). But this caution is scarcely kept in mind throughout his discussion, and the reader hears little or nothing of the possibility that inborn differences among the people of the world, in intelligence or other capacities, make large differences in efficiency of man-

agement inevitable. Then, too, throughout the book, we hear much of the "wastes" which socialists have long maintained to be characteristic of spontaneous business enterprise, such as competitive selling activities (including advertising), excess plant capacity, and business cycles. Frequently our author refers to the 20 or 30 per cent increase in output per man which he thinks our centralized war-time administrations brought about; and he often contrasts the muddle of our chaotic industry with the common-sense administration of a small camping party, or the widely ordered harmony which an ideal "Industrial General Staff" would impose. No, he is not a socialist, — at least, in the ordinary sense, — for his hopes rest on other foundations, like the growth of the co-operative movement, an increasing proportion of "the engineering type of business man, like Mr. Ford," community planning enterprises, and voluntary teamwork in industry, such as Mr. Hoover is promoting, as well as on a considerable increase of state regulation and ownership of industry. To the enormous wastes which he considers inherent in competitive business, he blandly adds certain costs of politics, such as lobbying — entirely ignoring the protest, frequently made by opponents of socialism, that, if we try to reduce the wastes of competition by multiplying collectivist undertakings, we shall undoubtedly increase, largely, those wastes characteristic of politics. No notice is taken, either, of the possibility that the energy now consumed by purely competitive and acquisitive business activities, and by ostentatious consumption, is offset in some measure by the stimulus to productive efforts which these institutions afford. Veblen considered this sort of compensation worth mentioning; so also, apparently, do the General Motors and other large corporations, which maintain considerable competition among their divisions. Our author, to be sure, administers some refreshing grains of salt along the way: for instance, he makes some excuses for the pioneer methods of dealing with natural resources, and I suppose he does not consider all involuntary idleness to be humanly preventable, and therefore, in some sense, waste. But surely his use of the term "waste" will

very often commend itself more to the uncritical reader, than to him who realizes how vast and elusive are the problems, all full of issues still in reasonable dispute, involved in the assumptions which Mr. Chase makes. Two small examples of such issues, besides those I have mentioned, are the real significance of the Ontario Hydro system, and the social value of patent laws.

The book thus contains much of superficial analysis and of fervid terminology. But in regard to vital matters like these of which it treats, an energetic gadfly so acute as this one has a real function. The author's argument that many spontaneous movements, like scientific management, — not merely a few, like single tax or state socialism, — are steadily contributing something toward amelioration, is an outstanding feature which will please conservative or moderate readers. It must be remembered that any large attempt at synthesis of scattered fragments of science is always open to charges of superficiality, and that the better sort of such syntheses are surely as useful, in the long run, as are grubbing researches which tend to settle in detail the innumerable controversies (like the total rôle of patent medicine, for example) which are encountered by the "airplane view." A synthetic thinker like Mr. Chase, who is intolerant of the slow, mild methods of ordinary economists, and is also gifted with extraordinary eloquence, possibly does his most effective evangelism, not so much through attempting specific critiques of existing affairs, which he has not the patience to investigate laboriously, as through painting attractive pictures of life as he thinks it should be lived. There is more of this latter element in The Tragedy of Waste than I have indicated. As fast as he converts individual people to his views of sane ways of doing their own consuming and thinking, he is forthwith revolutionizing society.

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